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# Comparisons on the Cantonese-English Language Use of Family Members in Bilingual Home Environments and of Teachers in Bilingual Classroom Environments

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## Recommended Citation

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Comparisons on the Cantonese-English language use of family members in  
bilingual home environments and of teachers in bilingual classroom environments

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Speech, Language, and Hearing Sciences Departmental Honors Thesis  
University of Colorado at Boulder  
Defended: April 3, 2015

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### Abstract

This study examines the amount of Cantonese-English language use in two main language environments of preschool children enrolled at the Head Start centers in San Francisco, California. The objective of this study aims to investigate home and classroom environments of sequential, bilingual children who learn Cantonese (L1) from birth and English (L2) at a later age in school. The present study examined the L1-L2 use of parents (N = 64) and teachers (N = 9) in households and classrooms. Data regarding language use across family members and home activities were collected using questionnaires, and data regarding language use across school centers and classroom activities were collected using digital voice recorders. The language use of parents and teachers were each compared separately per dataset. Overall, L1 was reported to be the majority language used at home by all family members and across all home activities. L2 appeared to be used more across activities in the classroom but not across teachers. Results of the study suggest that L1 is maintained at home while school settings introduce and help develop the L2 of a dual language learner.

*Keywords:* bilingual, language environments, Cantonese, English, Head Start

## Introduction

Recent studies have shown bilingual children's language skills to be greatly related to the quality and quantity of their language experience in each language (e.g. Gutierrez-Clellen & Kreiter, 2003; Hoff et al., 2012; Leseman, Scheele, Mayo, & Messer, 2007; Pearson, 2007; Thordardottir, 2011; Thordardottir & Brandeker, 2013; Uchikoshi, 2006). In the past years, studies have focused on Spanish-English bilinguals' language learning environments (e.g. Branum-Martin, Mehta, Carlson, Francis, & Goldenberg, 2014; Gutierrez-Clellen & Kreiter, 2003; Hoff et al., 2012), but few studies have examined the dual language experience in bilingual children who speak other minority languages (e.g. Cantonese, Vietnamese) as a home language. The purpose of this study was to examine the language-learning environments of children who learn Cantonese (L1) as a home language from birth and English (L2) as a second language in preschool settings. Children who learn two languages at two different times during childhood are typically called sequential bilingual children or dual language learners. Specifically, I examined the use of Cantonese and English languages that are exposed to bilingual preschool children from family members and teachers in home and classroom environments. Additionally, this study examined if there were any differences in bilingual language use in the classrooms between two Head Start centers, Broadway and North Beach, where two different dual language-teaching methods were used.

In this study, I define language environments as the contexts in which a child directly or indirectly engages in verbal and nonverbal behavior with his or her communication partners. This study focuses on the interactions between children and their communication partners across household and school contexts (c.f. Branum-Martin, Mehta, Carlson, Francis, & Goldenberg, 2014; Collins, 2014; Hoff & Core, 2013; Jia & Aaronson, 2003). Although language

environments are a useful source in measuring a child's language input and exposure, the characteristics of each language environment vary greatly per child. A child may have ample language exposure in one setting, while another may have less exposure in the same context. This variation in environments can affect the rate at which a language is learned (e.g. Hoff & Core, 2013). The variation in home settings depends on many factors such as the family members' L1-L2 proficiency, home activities, and the unique cultural background of the household (e.g. Eilers, Pearson, & Cobo-Lewis, 2006; Hoff & Core, 2013; Jia & Aaronson, 2003; Quiroz, Snow, & Zhao, 2010). The variation in educational settings might also be related to differences in school programs that impose monolingual or bilingual learning environments (e.g. Chin, Daysal, & Imberman, 2013; Collins, 2014; Winsler, Diaz, Espinosa, & Rodriguez, 1999). In what follows, I summarize previous studies that have examined bilingual children's home and school language environments.

### **Home Linguistic Environment**

For sequential bilingual children, home is where a child first comes into contact with L1 spoken by his or her parents or caregivers. According to the U.S. Census Bureau (2010), about 1 in 5 children in the United States are exposed to a language other than English at home. All children in this study are exposed to the Cantonese and English languages at home as well as at school by parents and teachers. The Cantonese language is much different from English, because the words do not undergo inflection and are distinguished by 6 identifiable tones: 1 = high falling; 2 = high rising; 3 = mid level; 4 = low falling; 5 = low rising; 6 = low level (Fletcher, Leonard, Stokes, and Wong, 2005; Hung & Peters, 1997). The lexical morphemes of the language take the form of separate syllables (i.e. free morphemes; words) that are assigned a tone to give it meaning (Hung & Peters, 1997). Comparative to English, Cantonese utterances tend to

have a longer and more complex structure that uses a more diverse repertoire of words (Wong, Au, & Stokes, 2004).

For young dual language learners who learn L1 at home and L2 in schools, measuring the exposure of a minority language at home can be very complex due to the differences in language proficiency for each family member (e.g. Pearson, 2007). Previous studies have also shown to have successfully measured and found differences among family members' use of L1 and/or L2 (e.g. Branum-Martin et al., 2014; Quiroz, Snow, & Zhao, 2010). Another study, Eilers, Pearson, and Cobo-Lewis (2006) found that the majority of children in the United States who hear a non-English language are children with parents who are foreign-born. When children engage in conversations with their foreign-born parents or other foreign-born family elders (e.g. grandparents), the language used would likely be the elders' heritage language, L1. Branum-Martin and colleagues (2014) examined the language use in the homes of 1,115 Spanish-speaking children and reported that families that use more L1 tend to have interactions and conduct activities with their children in L1 and fewer activities in L2, and vice versa. Looking back on my childhood experiences, my mother would speak to me and teach me lessons in Cantonese (my L1), because it was her dominant language for communication. When engaging with other members such as the child's older siblings or peers, the main language used may vary according to the situation or the conversational partner's preferred language of use. One observation I had in both school centers was that I noticed preschool students would first communicate with me in the language they initially heard me speak in, English. When they realized I could speak some Cantonese, they began to use both languages to speak to me. The students also knew which teachers were bilingual and which were English-speaking and effortlessly switched between communicating in L1 and L2. From this observation, I concluded

that the students are able to switch their L1-L2 use according to their communicative partner's dominant language.

The use of L1 and L2 may also vary across home activities (e.g. Branum-Martin et al., 2014). Activities at home may include structured literacy-related activities (e.g. book reading, word learning games), dining time, and entertainment (e.g. television watching) (e.g. Branum-Martin et al., 2014; Duursma et al., 2007; Hammer, Miccio, & Wagstaff, 2003; Jia, Aaronson, & Wu, 2002; Uchikoshi, 2006). Although few studies have directly compared L1-L2 use across various home activities, there is evidence showing that the amount of L1 and L2 might be different across those activities. For instance, structured activities (i.e. book reading at home) may incorporate a more diverse combination of L1 and L2 (e.g. Quiroz, Snow, & Zhao, 2010). In contrast, L1 may likely be used more during dining times when all members of the family, especially grandparents, are likely to have stronger a knowledge of L1.

Interestingly, the input and preference for L1 and L2 changes depending on the age of L2 acquisition. For example, a longitudinal study conducted by Jia and Aaronson (2003) reported that young L2 learners, ages 5-9 years, exhibited a preference shift from L1 to L2 for reading and speaking within three years of study, interacted with more L2-speaking friends, and preferred watching L2 television. Older L2 learners, ages 12-16, remained using L1 as their preferred language for reading and speaking and favored to communicate with L1-speakers. Jia and Aaronson's findings (2003) are consistent with my personal experience of my preference shift from L1 to L2. I began to attend English-only schools at age 7, and due to my increased involvement with classes and assignments, I gradually started to prefer using English for communication purposes and abandoned speaking Cantonese completely by middle school. Due to my lack of involvement with L1 through time, I am not able to read or write in L1 today, but I

can still understand when someone speaks the language and carry minimal basic-level conversations.

In addition to family members and home activities, there are two other factors that also have an effect on language-learning environments. The first factor involves cultural influences at home. For example, Wang, Leichtman, and Davies (2000) reported that American mothers are likely to respond to their child with elaborative comments when discussing the contents of a story, while Chinese mothers tend to focus on the moral lesson(s) and standards for behavior by using a repetitive and didactic style of teaching. This information suggests that mothers from different cultural backgrounds construct unique narrative environments in which their children learn to adopt their mother's style of speech and values. In regards to word learning, North American families focus more on the names of objects such as concrete nouns, and Asian families focus more on action words (e.g. Choi, 2000; Tardif, Shatz, & Naigles, 1997). This suggests that American children may develop a language and worldview focused more on objects while Asian children's language may focus more on the means of actions and events.

A household's socioeconomic status (SES) is the second factor that may affect a child's home language environment (Hoff, 2003; Hoff & Tian, 2005). For example, Hoff (2006) reported that families from different SES backgrounds (high, mid, or low) have very dissimilar styles of interaction. High-SES mothers speak more and use more of a variety of new words than lower SES mothers. Comparatively, the purpose of utterances elicited by high-SES mothers is to have a conversation with their child, while the purpose of utterances elicited by lower SES mothers is to direct behavior of their child. On average, children from lower SES backgrounds are exposed to and produce half the total amount of words compared to children from higher SES



backgrounds who are exposed to longer utterances with a richer vocabulary (Hoff, 2006; Hoff 2003).

In summary, the amount of L1 and L2 used at home in Cantonese-dominant families can be complex to measure. If language environments are related to bilingual children's language development, it is important to gather information that reflect bilingual children's language exposures across different contexts, including interactions with family members and various home activities (see Methods and Appendix A for the parent questionnaire).

### **Classroom Linguistic Environment**

For sequential bilingual children, the classroom is likely to be one of the first environments they become introduced to L2. Educational settings, such as preschools, tend to be more formal than home settings, because the majority of language use in the classroom is decontextualized (e.g. Rowe, 2013; Schoonen & Verhallen, 2008). For example, teachers conduct narrative lessons outside of the here-and-now on manners and daily routines such as washing hands before eating and saying "please" and "thank you." At school, teachers' language use tends to follow "mainstream, middle class norms," which likely contrasts with language use at home, allowing children to have a greater chance of being exposed to language that represents a more formal vocabulary and grammar (Hoff, 2006). The language use in classroom settings is critically important for children who are exposed to a minority language at home and learn English as a second language. In the U.S., the language of instruction for sequential bilingual children ranges from programs that exclusively use English (e.g. mainstream English programs) to programs that use both the home language and English (bilingual programs; e.g. Barnett, Yarosz, Thomas, Jung, & Blanco, 2007; Collins, 2014; Tong, Irby, Lara-Alecio, & Mathes, 2008). Recent research shows that classrooms in the Head Start centers use both L1 and L2

throughout the school day, which evokes a main question regarding if there are significant differences in the effectiveness of bilingual programs in comparison to monolingual programs. A longitudinal study conducted by Barnett et al. (2007) found that Spanish-speaking preschool children from lower SES families who attended high-quality, bilingual programs made significant advancements in both languages, even greater than students who attended monolingual programs. In another study, Lao (2004) investigated parents' opinion towards Chinese-English education and reported that Chinese-dominant parents strongly supported dual language education because they believed their child could have better career opportunities if he or she had knowledge in both languages. Maintaining the Chinese language can also allow their child to communicate in the Chinese-speaking community, develop a positive self-image, and remain to his or her native cultural roots. Lao also stated that the parents believed bilingual education helps the development of both their child's L1 and L2.

Although studies show the advantages of bilingual programs, there are differences among those programs in practice due to the availability of bilingual teachers and resources. The current study examines the L1-L2 use in two Head Start centers that practice two different bilingual methods of classroom instruction. The two Head Start centers of interest, Broadway and North Beach, are located near the San Francisco Chinatown where many Chinese families enroll their children to the preschools. Teachers' L1-L2 use in both centers varies according to the classroom activities that day, instructions spoken in L1 and/or L2, and the language background of the teachers (i.e. English monolingual or Cantonese-English bilingual). Equal amounts of dual language use are predicted to occur during structured large-group activities such as Circle Time, while uneven amounts of language use are predicted to occur during spontaneous and

conversational speech (i.e. dining times, playing times), which are dependent on the teacher's preferred language of use.

To the best of my knowledge through classroom observation, L1 and L2 use at the Broadway center is spontaneous and less structured, while the North Beach center aims at framing main lessons to be taught in both languages. During my time in San Francisco, I have noticed differences in classroom characteristics and teaching style between both centers through observation and teacher interviews. Broadway also employed one more English monolingual teacher than North Beach.

### **The Current Study**

This study measures Cantonese-English bilingual language use in home and classroom environments of preschool children and determines if there are any L1-L2 differences within and between the environments measured. Data were not collected on the children, but on their two main sources of language input, family members and schoolteachers. Many studies have been quantitatively geared towards monolingual language and lexical development, but few have focused specifically on the quality *and* quantity of language input in bilingual environments that include minority languages. This study measures the amount of bilingual language exposure in home and classroom environments, along with the different types of input received by L2 learners in specific activities such as conversational input (spontaneous), informative input (literacy building), and directive input (instructional). Gaining new knowledge about the quality and quantity of language use in bilingual environments will help the greater community have a better understanding of the amounts of dual language input Cantonese-English bilingual preschool children receive in their major learning environments. In order to address some

limitations of previous research by focusing on both the quality and quantity of bilingual language environments, the present study will explore and answer the following five questions:

1. What are the amounts of L1 and L2 use at home?
2. Are there any differences in L1-L2 use across family members?
3. Are there any patterns of L1-L2 use across home activities?
4. What are the amounts of L1 and L2 use at the two Head Start centers, Broadway and North Beach, where two different instructional approaches were used?
5. Are there any patterns or differences in the use of L1 and L2 across classroom activities within and between both centers?

I anticipate that L1 would be the majority language used at home. I also anticipate differences in L1-L2 use across family members, especially between grandparents and older siblings, because the older siblings are likely to have a more developed L2 than their grandparents. I expect differences in the use of L1 and L2 across home activities that vary in style and structure (i.e. spontaneous, literacy building, and entertainment). In terms of language use at school, I hypothesize that there will be dissimilarities between the use of L1 and L2 between the Head Start centers and classroom activities, given the differences in teachers and instructional approaches of the two centers. Broadway is anticipated to use more L2 and less L1 compared to North Beach.

## **Methods**

### **Participants**

A total of 81 participants were recruited in the present study; 72 were parents/caregivers and 9 were teachers. I will refer both parents and caregivers under the term *parents* to maintain clarity. The parents and teachers were recruited from two of six Head Start centers, Broadway

and North Beach, in San Francisco, California. The two centers are a part of Kai Ming Head Start, a program established in 1975 that offers free preschool education for low-income families. The majority of the children enrolled in the Head Start centers was initially exposed to Cantonese (L1) at home and began or continued learning English (L2) at Head Start. A small number of children may have learned other minority languages at home as well (e.g. Tagalog, Spanish). Cantonese and English were the two main languages used in the classrooms at both centers.

### Parents

A total of 72 parent participants were recruited. Upon completion of the consent process, each parent was asked to fill out a questionnaire. The questionnaires were available in two languages: Chinese (the written form of Cantonese) and English (see Appendix A). All parents returned the questionnaires, but 64 forms were eligible for the study. The questionnaires were eligible only if the languages spoken at home included Cantonese and English. The majority of respondents were *mothers* (N = 49), the second highest category of respondents was *fathers* (N = 10), and the remaining were *both parents* combined or *other* (N = 5). The majority of parents reported that high school was their highest level of education received. Note that there were no reports of graduate-level education attained by any parent, and not all parents responded to this part of the questionnaire. Table 1 depicts the frequencies and percentages of the highest level of education attained by parent participants. Parents were not interviewed.

**Table 1. Parents' Highest Level of Education Attainment**

	N*	Elementary School	Middle School	Junior High	High School	College	Total
Father	57	3.5%	3.5%	14%	49.1%	29.8%	100%
Mother	63	1.6%	3.2%	28.6%	54%	12.7%	100%

\*Note: Percentages are relative to the total amount of members reported (N).

Overall, parent participants reported that Cantonese (L1) was spoken significantly more than English (L2) at home by all family members, suggesting that their children receive mostly L1 input in home settings (see Table 3). The information also suggests that L1 is the parents' native language. Fifty-three parents (82.8%) reported their child was born in the United States, suggesting that the parents may have immigrated to the United States prior to their child's birth.

### Teachers

A total of 9 teachers were recruited. One third of the teachers ( $N = 3$ ) were English monolinguals and used only English in the classroom, and the remaining teachers ( $N = 6$ ) were Cantonese-English bilinguals who used both languages in the classroom. The Broadway center employed two English monolingual teachers and three bilingual teachers, while the North Beach center employed only one English monolingual teacher and three bilingual teachers. Usually, there are 2 teachers per classroom, but one Broadway classroom had 3 teachers. Two English monolingual teachers were never placed together to teach in the same classroom; there was always a Cantonese-speaking teacher in each of the four classrooms observed. All teachers were female and were interviewed. Table 2 describes the language backgrounds of each teacher and the center they taught at.

**Table 2. Teacher characteristics**

Teacher	Center	Language Background
Teacher A	Broadway	Monolingual: English
Teacher B	Broadway	Bilingual: Cantonese-English
Teacher C	Broadway	Bilingual: Cantonese-English
Teacher D	Broadway	Bilingual: Cantonese-English
Teacher E	Broadway	Monolingual: English
Teacher F	North Beach	Bilingual: Cantonese-English
Teacher G	North Beach	Bilingual: Cantonese-English
Teacher H	North Beach	Bilingual: Cantonese-English
Teacher I	North Beach	Monolingual: English

**Measures****Language input: Parents**

Language input at home was measured using questionnaires available in Chinese or English to best fit the parent's proficient language. The general format of the questionnaire was obtained from Pérez-Tattam, Gathercole, Yavas, Stadthagen-González, & Anrrich (2013). To minimize error and maximize efficiency, the questionnaire was thoughtfully designed with checkboxes for responses instead of fill-in-the-blank. Response options were presented categorically (i.e. ☐ 100% Cantonese; ☐ 80% Cantonese, 20% English; ☐ 60% Cantonese, 40% English; etc.) and parents were to check the box that most accurately represented their home environment for the specific member or activity. The questionnaire was composed of three main parts: background information, language use per family member, and language use per home activity. The section on background information inquired about general language preference, language history, and parent education information. Family member options included Mother, Father, Older Sibling, Younger Sibling, Grandmother, and Grandfather. Home language activities included Reading Out Loud, Telling Stories Out Loud, Playing Word Games, Breakfast, Lunch, Dinner, Watching TV, Playing with Home Members, and Playing with Friends. They were organized into three categories: Home Literacy, Dining, and Entertainment.

**Language input: Teachers**

Language input in the classroom was measured using audio-recording devices. Each teacher was recorded on various activities within one 7-8 hour school day using an Olympus VN-702PC digital voice recorder. The recorders were placed near the teacher during main classroom activities that involved all students (i.e. circle time) and divided groups of students (i.e. dining time; learning activities). Teachers were not recorded during children's naptime

because language was not used; and teachers were not recorded during outdoor play because interactions were individually oriented to a student rather than to a group as a whole. The current study focused on teachers' language use towards groups of students rather than individuals to assure the data that were being collected maintained a level of congruency.

The classroom activities/recordings were organized into three main categories: Dining, Circle Time, and Learning Activities. Dining included breakfast, lunch, and snack at three different times of the day. Circle Time also occurred several times during the day where teachers spoke to the entire class and lead activities such as singing songs and storybook reading. Learning Activities involved teachers teaching the students about moral rules and behavioral standards from storybook discussion, crafts, and various instances where teachers can implement learning lessons within the game/activity (See Appendix B for the classroom schedule).

Teachers were interviewed to complement the study with additional information and a well-rounded understanding of the classroom curriculum and individual teaching style. The interviews were not digitally recorded.

## **Procedures and Data Analysis**

### **Parent Questionnaires**

Each participating parent was given a questionnaire in his or her proficient language to take home or complete in the classroom. If the parents took the questionnaire home, they were asked to return it within two days. When all of the questionnaires were returned, each form was checked for completion and returned to the parent to fill out any information that were missed. The completed questionnaires were kept in a safe folder until my return to Colorado where they were entered into a computer database. The questionnaire data were then organized in an Excel spreadsheet for statistical analysis.



**Teachers' language input in the classroom**

Each teacher participant was observed and recorded for one full class day (7-8 hours). Data were collected from two classrooms in the Broadway center and two classrooms in the North Beach center. Each of the classrooms was visited once. All four classrooms had a similar schedule that consisted of breakfast, circle time, free play/small group activities, outdoor play, lunch, naptime, and snack (See Appendix B). The digital voice recorders were carefully placed beside each teacher during meal times, circle times, and learning activities. One voice recorder was assigned to each teacher and remained with her the entire day. The teachers were never interrupted during class, and they were interviewed at times most convenient for them. The interviews were not documented on the digital recorders, but descriptive notes were taken on paper.

After each full day of recording, the audio files were safely uploaded into the hard drive of a laptop computer and erased from the digital recorders so they can be used again for the next day. When I returned to Colorado, all sound files were transferred from the laptop to the laboratory computer and permanently erased from the remaining devices. The audio files had to be converted from MP3 format to WAV format using an audio editor software program, Audacity (Mazzoni & Dannenberg, 1999) prior to transcription. This step was necessary, because Praat (Boersma & Weenink, 2015), the software program used for transcription, only read WAV files in order to construct soundwave and spectrogram images. English monolingual and Cantonese-English bilingual research assistants then transcribed the WAV files on Praat. English monolingual assistants transcribed audio recordings of their assigned English monolingual teachers, and Cantonese-English bilingual research assistants transcribed audio recordings of their assigned Cantonese-English bilingual teachers. The bilingual research

assistants were not expected to be fluent speakers of Cantonese, but they had to be able to understand the language fluently in order to transcribe the recordings. Along with transcription, the research assistants also measured the length of each utterance spoken by their assigned teacher.

Trained research assistants were given multiple recordings of their assigned teacher. The assistants listened to the entire file and documented every utterance their teacher said to the best of their ability. They did not transcribe other teachers' voices in the background. Preschool settings can sometimes be loud and chaotic, so it was expected that some utterances would be marked unintelligible in the transcription. When transcribing bilingual sound files, research assistants would use specific romanized spellings for Cantonese words (e.g. "apple" → "ping guo"; "friend" → "peng yau") to keep the transcriptions consistent for analysis. The lengths of Cantonese and English utterances were measured also using Praat. The sound files were displayed as soundwaves and spectrograms in the program, allowing the transcriber to highlight each utterance segment accurately from the beginning to the end where the length was automatically calculated in seconds.

Each sound recording on an activity varied in length per teacher, because the many interactions between teachers and students were unique and dissimilar. Along with the differing length of times per recording, teachers themselves also had an unequal amount of recorded sessions. In other words, the teachers were not recorded for the same number activities across all classrooms. Learning Activities were also not identical across classrooms (one classroom made playdough, another made crafts, and another had a lesson on feelings), and some teachers had missing sound recordings, because they had to attend mandatory meetings while another teaching assistant substituted for her. The teaching assistants could not be a part of the study,

because they were not the leading teachers and did not complete the consent process. Due to the inconsistencies in number and total duration of the sound files across teachers, the length of the teachers' utterances in each language per activity were averaged and quantitatively analyzed rather than statistically analyzed between and within centers.

### **Research Design**

In the present study, my plan was to use two separate research designs for examining the language input of two different datasets: the parent dataset and the teacher dataset. Statistical analyses were performed for the parent dataset, and the amount of language input in home environments was compared across members then across activities of all families. The independent variables for the parent dataset were language (Cantonese vs. English; L1 vs. L2) and home activity, and the dependent variable was the amount of language input. Statistical analyses were not performed for the teacher dataset, so the amount of language input in classroom environments was compared quantitatively across activities and between centers in the teacher dataset. The independent variables for the teacher dataset were language (Cantonese vs. English; L1 vs. L2) and center (Broadway vs. North Beach), and the dependent variables were the amount of language input from home and classroom environments.

### **Parents**

Parents were placed in a condition where the information from their responses was limited to the questions asked in the questionnaires. Additional information through interviews could not be gathered, because interviewing each parent was not part of the protocol and would be too timely. Because the best possible way to obtain information regarding language use at home was through the utilization of questionnaires, the document was carefully designed to best

cover all aspects of bilingual language use at home and included many family member options and specific activities.

### **Teachers**

The teachers were placed in a non-manipulative condition where they were encouraged not to mind the digital voice recorder and to resume normal, routine activities and interactions with their students. I was present during all recording activity visually observing and taking additional notes to complement the audio data. When the time was suitable, I asked clear questions about the current activity and the teacher would explain her answers.

## **Results**

### **Language Use at Home**

#### *L1-L2 use across Family Members*

In the questionnaire, I included questions regarding L1-L2 use among the following members that lived at home: Mother, Father, Older Sibling, Younger Sibling, Grandmother, and Grandfather. Parents were asked to select the most accurate amount of L1-L2 use per member from the following categories:

- 100% Cantonese
- 80% Cantonese, 20% English
- 60% Cantonese, 40% English
- 50% Cantonese, 50% English
- 40% Cantonese, 60% English
- 20% Cantonese, 80% English
- 100% English

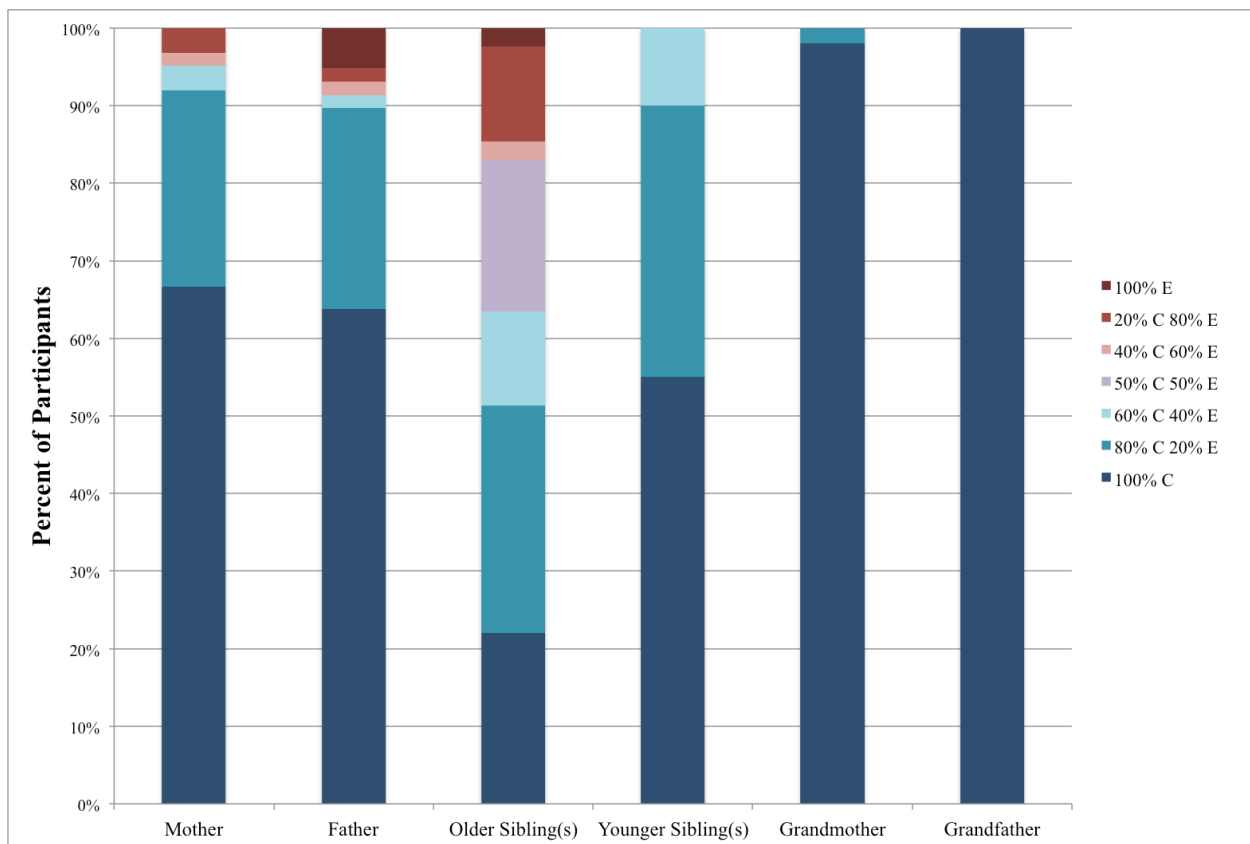
Table 3 depicts results from the questionnaires pertaining to the language use among each family member. Of the completed forms, language use was reported for 63 mothers, 58 fathers, 41 older siblings, 20 younger siblings, 51 grandmothers, and 42 grandfathers. Although 64 parents participated in this study, not all parents reported every family member's language use. It

was possible that some families did not have all members living in their home that were listed in the questionnaire, or the parent who filled out the questionnaire failed to report the language use for a certain member because he or she did not have the information.

**Table 3. Distribution of family members' use of Cantonese and/or English**

	Mother	Father	Older Sibling(s)	Younger Sibling(s)	Grandmother	Grandfather
Language Use	N* = 63	N* = 58	N* = 41	N* = 20	N* = 51	N* = 42
100% C	66.7%	63.8%	22%	55%	98%	100%
80% C, 20% E	25.4%	25.9%	29.3%	35%	2%	0%
60% C, 40% E	3.2%	1.7%	12.2%	10%	0%	0%
50% C, 50% E	0%	0%	19.5%	0%	0%	0%
40% C, 60% E	1.6%	1.7%	2.4%	0%	0%	0%
20% C, 80% E	3.2%	1.7%	12.2%	0%	0%	0%
100% E	0%	5.2%	2.4%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%

\*Note: Percentages are relative to the total amount of members reported (N).

**Figure 1. Distribution of family members' use of Cantonese and/or English with target child**

\*Note: Percentages are relative to the total amount of members reported (N) (See Table 3).

Overall, as shown in Figure 1, Cantonese (L1) was reported to be the dominant language used at home by all family members. The color blue signifies L1, the color red signifies L2, and the color purple signifies an even use of L1 and L2. The amount of L1 or L2 used correlates to the shade of the color (i.e. dark blue = 100% Cantonese; blue = 80% Cantonese, 20% English; light blue = 40% Cantonese, 60% English; dark red = 100% English; red = 20% Cantonese, 80% English; light red = 40% Cantonese, 60% English). The colors apply to all following figures. Statistical analysis shows there were differences in L1-L2 use among family members, [ $\chi^2(5) = 15.93, p < .001$ ]. Almost all grandparents were reported to speak only Cantonese; and while parents were reported to speak mostly Cantonese, it appears that they integrate some English in their speech to their child. Results on older siblings' language use between L1 and L2 was most diverse out of all members, and younger siblings were reported to speak some L2, but never over 50%.

#### *Home Activities: L1 and L2 use at home*

Data were collected on 9 home activities, and they were divided into three categories: Home Literacy, Dining, and Entertainment. Figures 2, 3, and 4 illustrate the language use for each activity per category. Across all three home activity categories, Cantonese (L1) was reported to be the dominant language used.

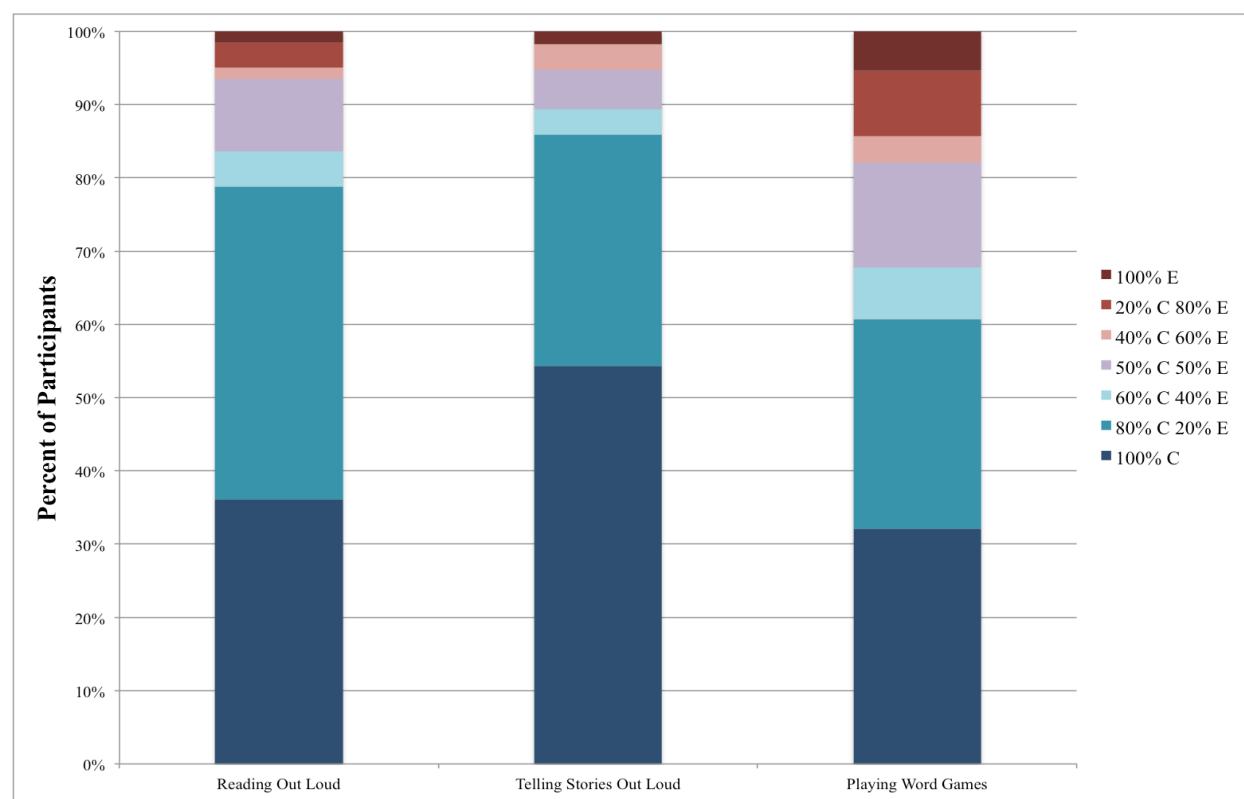
#### *Home Literacy Activities*

Oral activities with the child such as reading aloud, telling stories, and playing word games make up the home literacy activities category. These home activities are aimed to teach the child new words and concepts to increase his or her vocabulary knowledge. Table 4 and Figure 2 show the reported amount of L1 and L2 use for each activity.

**Table 4. Distribution of family members' use of Cantonese and English across home literacy activities**

	Reading Out Loud	Telling Stories Out Loud	Playing Word Games
Language Use	N* = 61	N* = 57	N* = 56
100% C	36.1%	54.4%	32.1%
80% C, 20% E	42.6%	31.6%	28.6%
60% C, 40% E	4.9%	3.5%	7.1%
50% C, 50% E	9.8%	5.3%	14.3%
40% C, 60% E	1.6%	3.5%	3.6%
20% C, 80% E	3.3%	0%	8.9%
100% E	1.6%	1.8%	5.4%
Total	100%	100%	100%

\*Note: Percentages are relative to the total amount of activities reported (N).

**Figure 2. Distribution of family members' use of Cantonese and English with target child across home literacy activities**

\*Note: Percentages are relative to the total amount of activities reported (N) (See Table 4).



As shown in Figure 2, Cantonese (L1) was the majority language used for all three home literacy activities. However, there are differences between the use of L1 and L2 across these activities, [ $\chi^2(2) = 14.31, p < .001$ ]. *Telling stories* was reported to use the most L1 in this category, likely taking the form of parent narratives to the child. *Reading out loud* was reported to use the second highest amount of L1. Lastly, results on L1-L2 use for *playing word games* was the most distributed and used the greatest amount of L2 compared to the other two activities.

### *Dining*

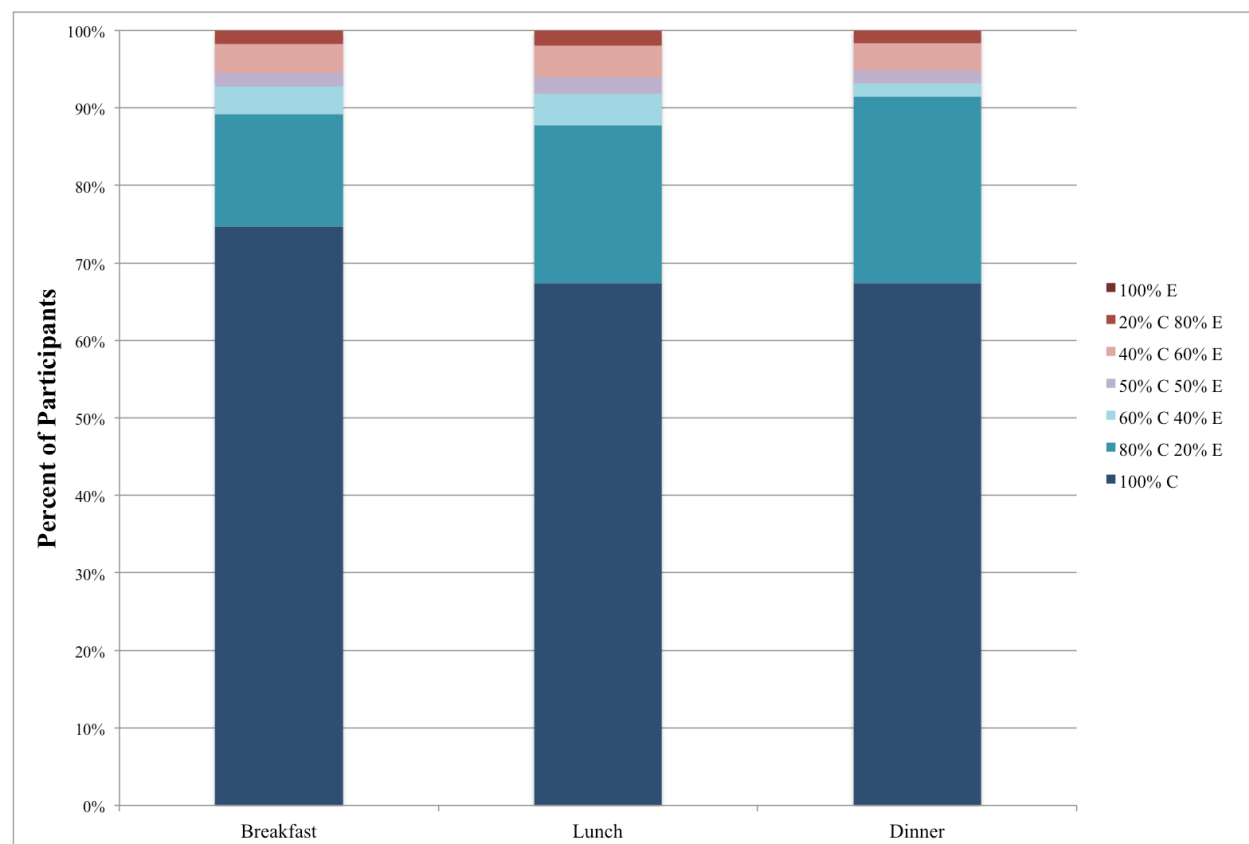
Table 5 and Figure 3 show the L1-L2 use during breakfast, lunch, and dinner at home. Overall, L1 was reported to be the language that was strongly used for all three dining occasions. In contrast to the home literacy category, there were no significant differences among the language use during breakfast, lunch, and dinner, [ $\chi^2(2) = 2.8, p > .05$ ].

**Table 5. Distribution of family members' use of Cantonese and English across dining times**

	Breakfast	Lunch	Dinner
Language Use	N* = 55	N* = 49	N* = 58
100% C	74.5%	67.3%	67.2%
80% C, 20% E	14.5%	20.4%	24.1%
60% C, 40% E	3.6%	4.1%	1.7%
50% C, 50% E	1.8%	2%	1.7%
40% C, 60% E	3.6%	4.1%	3.4%
20% C, 80% E	1.8%	2%	1.7%
100% E	0%	0%	0%
Total	100%	100%	100%

\*Note: Percentages are relative to the total amount of activities reported (N).

**Figure 3. Distribution of family members' use of Cantonese and English with target child across dining times**



\*Note: Percentages are relative to the total amount of activities reported (N) (See Table 5).

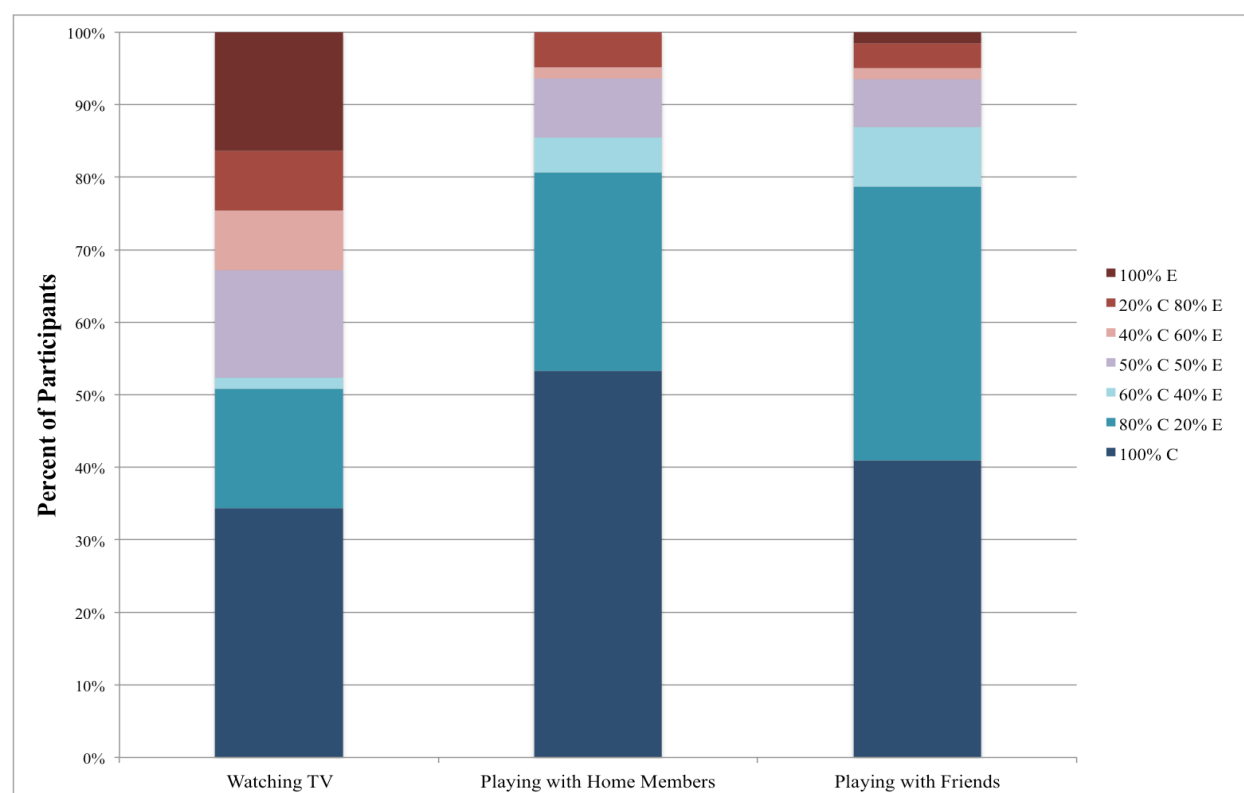
### *Entertainment*

Generally speaking, entertainment could be more difficult to define compared to *Home Literacy Activities* and *Dining Times*. Children could take pleasure in many forms of entertainment such as watching TV or engaging in free play with others. In this study, the entertainment category was composed of Watching TV, Playing with Home Members, and Playing with Friends. The reported amount of L1-L2 use is summarized in Table 6 and Figure 4. There were significant differences in terms of the language use across the three entertainment activities [ $\chi^2(2) = 27.49, p < .001$ ].

**Table 6. Distribution of family members' use of Cantonese and English across entertainment activities**

	Watching TV	Playing with Home Members	Playing with Friends
Language Use	N* = 61	N* = 62	N* = 61
100% C	34.4%	53.2%	41%
80% C, 20% E	16.4%	27.4%	37.7%
60% C, 40% E	1.6%	4.8%	8.2%
50% C, 50% E	14.8%	8.1%	6.6%
40% C, 60% E	8.2%	1.6%	1.6%
20% C, 80% E	8.2%	4.8%	3.3%
100% E	16.4%	0%	1.6%
Total	100%	100%	100%

\*Note: Percentages are relative to the total amount of activities reported (N).

**Figure 4. Distribution of family members' use of Cantonese and English with target child across entertainment activities**

\*Note: Percentages are relative to the total amount of activities reported (N) (See Table 6).

As shown in Figure 4, Watching TV was reported to incorporate the highest amount of English in the home entertainment category. It was also the most diverse in L1 and L2 exposure of all three activities. The reported language use while playing with home members and friends is very similar, but less L2 was used when playing with home members and never involved 100% English, unlike playing with friends.

### **Language Use in the Head Start Centers**

The bilingual language use in the Head Start centers was first obtained by audio recording instruments, then measured and separated into Cantonese and English utterances using Praat. Classroom results were divided into three main categories: Dining Time, Circle Time, and Learning Activities. On average, both centers, Broadway and North Beach, spoke more English than Cantonese in the classrooms. Table 7 depicts the measured L1 and L2 use for each recording session obtained from the 9 teacher participants from both centers. Table 8 depicts the calculated average of each teacher's recorded sessions by activity category. Table 9 averaged the recordings across teachers and summarized the total, averaged amount of L1 and L2 use per activity category by center.

**Table 7. Amount of teachers' Cantonese and/or English language use (in seconds) per recorded session**

<b><u>Broadway</u></b>										
Teacher	Teacher A		Teacher B		Teacher C		Teacher D		Teacher E	
Number of Recordings	4		3		1		5		5	
Language	L1	L2	L1	L2	L1	L2	L1	L2	L1	L2
<i>Dining</i>										
Breakfast	0	327.04	294.50	98.39	0.64	258.73	111.16	116.42	0	394.71
Lunch	-	-	-	-	-	-	96.49	49.02	0	192.04
Snack	-	-	-	-	-	-	129.35	68.25	0	478.06
<i>Circle Time</i>										
	-	-	396.63	118.79	-	-	37.01	49.38	0	410.75
	-	-	42.33	43.22	-	-	-	-	-	-
<i>Learning Activities</i>										
Games	0	639.94	-	-	-	-	-	-	-	-
	0	311.84	-	-	-	-	-	-	-	-
Emotions Lesson	-	-	-	-	-	-	135.62	288.05	0	134.43
Storybook	0	569.15	-	-	-	-	-	-	-	-
<b><u>North Beach</u></b>										
Teacher	Teacher F		Teacher G		Teacher H		Teacher I			
Number of Recordings	5		6		10		6			
Language	L1	L2	L1	L2	L1	L2	L1	L2		
<i>Dining</i>										
Breakfast	103.21	163.28	297.95	26.89	329.67	116.56	0	505.32		
Lunch	87.01	54.48	-	-	27.06	24.07	0	545.77		
Snack	-	-	-	-	169.45	42.96	-	-		
<i>Circle Time</i>										
	59.70	5.13	133.59	51.19	92.22	15.70	0	18.34		
	-	-	58.25	16.76	33.77	29.56	0	198.33		
	-	-	138.78	12.79	345.23	413.13	0	174.20		
	-	-	-	-	251.85	422.50	-	-		
<i>Learning Activities</i>										
Storybook	163.75	435.78	202.53	3.84	-	-	-	-		
Crafts	213.06	253.22	659.69	98.86	228.26	89.36	0	666.25		
	-	-	-	-	208.81	145.71	-	-		
	-	-	-	-	4.70	18.59	-	-		

**Table 8. Averaged amount of teachers' Cantonese and/or English language use (in seconds) per classroom activity category**

<b>Broadway</b>										
Teacher	Teacher A		Teacher B		Teacher C		Teacher D		Teacher E	
Number of Recordings	4		3		1		5		5	
Language	L1	L2	L1	L2	L1	L2	L1	L2	L1	L2
<i>Dining</i>	0	327.04	294.50	98.39	0.64	258.73	112.33	77.90	0	354.94
<i>Circle Time</i>	-	-	219.48	81.01	-	-	37.01	49.38	0	410.75
<i>Learning Activities</i>	0	506.98	-	-	-	-	135.62	288.05	0	134.43

<b>North Beach</b>										
Teacher	Teacher F		Teacher G		Teacher H		Teacher I			
Number of Recordings	5		6		10		6			
Language	L1	L2	L1	L2	L1	L2	L1	L2		
<i>Dining</i>	95.11	108.88	297.95	26.89	175.39	61.20	0	525.55		
<i>Circle Time</i>	59.70	5.13	110.21	26.91	180.77	220.22	0	130.29		
<i>Learning Activities</i>	188.41	344.50	431.11	51.35	147.26	84.55	0	666.25		

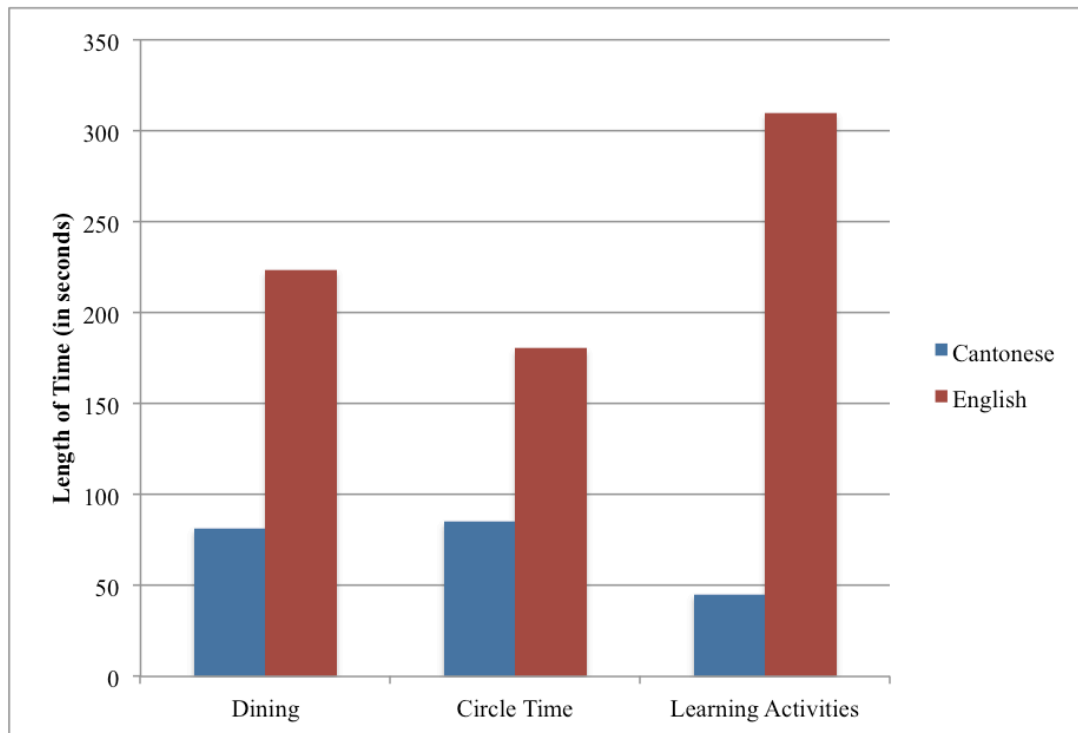
**Table 9. Averaged amount of Cantonese and/or English language use (in seconds) per category by center**

<b>Broadway</b>					
	Number of Recordings	L1	L2	L1-L2 Difference	Total Time
<i>Dining</i>	9	81.49	223.40	141.91	304.89
<i>Circle Time</i>	4	85.50	180.38	94.88	265.88
<i>Learning Activities</i>	5	45.21	309.82	264.61	355.03

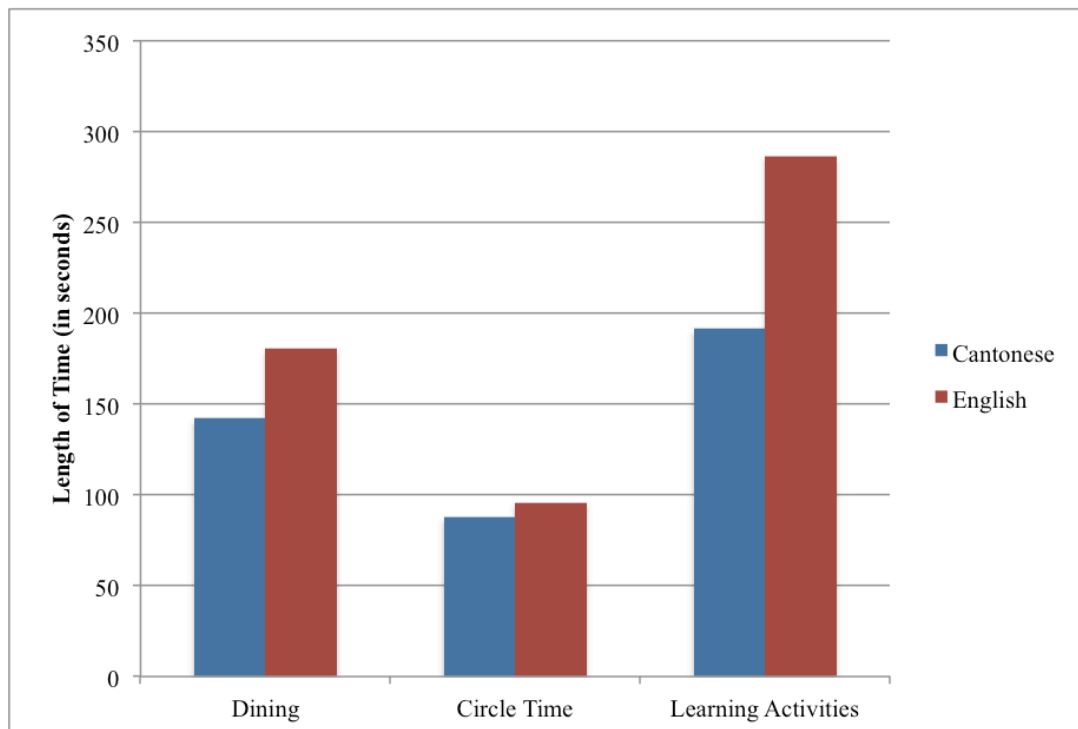
  

<b>North Beach</b>					
	Number of Recordings	L1	L2	L1-L2 Difference	Total Time
<i>Dining</i>	8	142.11	180.63	38.52	322.74
<i>Circle Time</i>	11	87.67	95.64	7.97	183.31
<i>Learning Activities</i>	8	191.70	286.66	94.96	478.36

**Figure 5. Cantonese and English language use across main classroom activities in the Broadway center**



**Figure 6. Cantonese and English language use across main classroom activities in the North Beach center**



Although I collected quantitative data on teachers' language use in the classroom, results varied across teachers and activities because there were too many inconsistencies in the number and length of the recordings per activity/session (i.e. teachers were absent for certain activities due to mandatory meetings and other obligations) (refer back to Tables 7 and 8). Therefore, rather than running statistical analyses, I would like to describe the overall, appeared L1 and L2 use in the Broadway and North Beach classrooms from the recordings I have obtained.

Quantitatively, as shown in Figures 5 and 6, English appeared to be spoken more than Cantonese in all activity categories in both centers. Broadway had much bigger L1-L2 differences than North Beach across all categories as well (i.e. spoke much more English than North Beach). Both centers also had identical patterns of L1 and L2 difference across the three activity categories. Learning Activities appeared to have the highest difference between Cantonese and English language exposure, followed by Dining, thus leaving Circle Time with the least amount of L1-L2 difference.

### *Dining Time*

This category included breakfast, lunch, and snack at three different times during the school day. Students were divided evenly into two or three groups, contingent on the number of teachers in the classroom. Each teacher spoke to their group as a whole, in other words, statements addressed to one child would also be heard by others. Although students were divided into groups for the three dining occasions, my observations show that classroom interactions between groups remained united as the teachers and students of one group would speak with another across dining tables. English appeared to be used more than Cantonese in both centers, however, more Cantonese was used in North Beach (142.11 s vs. 81.49 s), while more English



was used in Broadway (223.40 s vs. 180.63 s). In other words, Broadway had a higher difference between L1 and L2 exposure than North Beach in this category.

### *Circle Time*

Activities were assigned to this category only when teachers' interactions involved the entire, undivided group of students. All students sat together on the floor and participated in attendance activities, song singing, and storybook reading. It was a time for teachers to assemble students back from group-play and to redirect their attention for the next activity. For example, teachers would individually call on students and instruct them to wash their hands before sitting down for lunch or to go line up for outdoor play. Quantitatively, L2 was used more than L1 for Circle Time in both centers, but North Beach showed nearly equal amounts of dual language use with a difference of only 7.97 s compared to a difference of 94.88 s for Broadway. The difference of L1 and L2 use in this category was the smallest of all three categories in both centers.

### *Lesson Learning*

In this category, teachers taught students valuable lessons on behavioral standards, new words and concepts, and use of tools and utensils such as scissors, paintbrushes, and measuring cups. Specific activities were Chinese calligraphy, making playdough, word learning puzzles, storybook discussion, and lessons on manners (i.e. wait patiently for your turn; consequences of lying; identifying emotions). Results show English was used more than Cantonese in both centers. Differences in L1-L2 use in this category were greatest in Broadway compared to North Beach (difference of 264.61 s vs. 94.96 s). This category also had the greatest L1-L2 differences across all classroom activity categories.

### **Discussion**

The current study examines the L1 and L2 language exposure of preschool children who learn Cantonese (L1) as a home language and English (L2) as second language in two Head Start centers that use both target languages in their curriculum but differ in their instructional approaches. By using a questionnaire that I developed, I examined the amount of L1 and L2 use at home across different family members and activities. I also measured the L1 and L2 use (in seconds) by audio-recording teachers during class in the classrooms at Broadway and North Beach. In what follows, I discuss the language use at home and in school settings.

#### **Home: L1 and L2 use across members**

Results show that, overall, all family members were reported to use Cantonese (L1) significantly more than English (L2) at home. My findings accord Hoff and Core (2013), stating that most children in bilingual language environments tend to hear one language more than the other. In this case, the children of this study were exposed to more L1 than L2 at home, suggesting that their family members may have higher proficiency and familiarity with L1. However, there are significant differences in the use of Cantonese and English among family members. Referring back to Figure 1, almost all grandparents were reported to speak only L1. This suggests that the grandparents are possibly foreign-born and have immigrated to the United States at an older age. This also can explain that their heritage language (L1) is their proficient and preferred language for communication. Unfortunately, there were no data collected asking if the parents were foreign-born, but their strong preference in using L1 at home can help explain that they are likely to be proficient in Cantonese and may have emigrated from a foreign country. My results are consistent with Jia and Aaronson's longitudinal study (2003) that found immigrants arriving at an older age (i.e. 12 and older) maintained their preference in using L1 for

speaking and reading. Why do the parents in the current study report to integrate some L2 at home even though they are more proficient in L1? It is possible that the parents' L2 proficiency may have increased through interactions at work or in the community, allowing them to speak more English at home and other settings. They may also integrate L2 with L1 in order to encourage their child's dual language use and to respond in the same language their child initially spoke in.

In contrast, the language use for older siblings is very interesting, because L1-L2 use showed to be more distributed than any other home member. One possible suggestion may be that older siblings are becoming increasingly involved with school and receiving more L2 exposure in those settings. As a result, their use in the English language increases. It is also possible that older siblings may teach their younger sibling (the target child) words and concepts in L2 from material they recently learned in school, thus increasing the overall L2 use for the home member and word learning activities. My findings are, again, consistent with the results in Jia and Aaronson (2003) reporting that all younger arrivals (or young L2 learners in my case) significantly increased their amount of L2 use at home in only two years. In regards to younger siblings, they may not yet be of school-age and are likely to spend most their interactions with family elders, which can explain how younger siblings speak more L1 than L2 at home, but never L2 as the majority. When the younger siblings grow older and start to attend school, it is possible to see their L2 proficiency and use increase and become more distributed between both languages, taking the same dual language patterns as their older brothers and/or sisters.

I can personally relate to these results because I, too, grew up in a Cantonese-dominant family. I recall my grandparents living with my parents and me during my younger years, and they would care for me during the day when my parents worked. My grandparents rarely spoke

English at home while I would hear my parents speak some English during phone conversations. I had a knack for playing “teacher” and taught my younger sister various things, including how to spell her name in English and how to count numbers in both languages. My personal experience is very similar to Jia and Aaronson’s findings (2003), although I did not immigrate to the US from a foreign country, I was exposed to Cantonese (L1) at home, and it was my preferred language of use until I began to learn English (L2) in preschool and kindergarten. Eventually, I abandoned using L1 to read and speak and began using L2 increasingly as I became more involved with school. Today, I cannot read or speak well in my L1, and I use L2 for all communication interactions.

The questionnaires in this study not only inquired about the language use of mother, father, older and younger siblings, and grandparents, it also had the option to list *Other* members that lived at home. Some participants did list additional members in the section, but the members listed were too dissimilar to organize into one category (i.e. aunt, uncle’s wife, babysitter). Also, half of the participants that responded to the *Other* entry failed to list who the member was. Because the data was too sparse and incomplete, the *Other* category was not included in analysis.

### **Home: L1 and L2 use across activities**

The results in this study show Cantonese was used more than English across all home activities. Results for home activities are relatable to the findings in Branum-Martin et al. (2014), finding families that prefer to use L1 to communicate would naturally choose to use the same language in other interactions with other family members. In the current study, all family members were reported to use more Cantonese than English at home, which is consistent with the results that show Cantonese was used more than English for all home activities (refer back to Figures 1, 2, 3 and 4). In what follows, I discuss the language use reported on the nine home

activities that were separated into the following three categories: Home Literacy, Dining, and Entertainment.

### *Home Literacy*

In the parent questionnaires, the activities that were organized into this category also inquired the parent to report the amount L1 and L2 used for the following: Reading Out Loud, Telling Stories Out Loud, and Playing Word Games. Overall, Cantonese (L1) was used as the majority language for more than 50% of the activities of this category. The results also show that there were significant L1-L2 differences among the three activities. The patterns of language use from parent reports show that more families appear to use more L1 when they *tell stories* than when they *read out loud* or *play word games*. The act of telling stories to a child is similar to telling narratives. Narratives are a form spontaneous speech, and it is likely to be spoken in the speaker's dominant and preferred language. As shown in Figure 1, Cantonese is the dominant language for all home members, which explains why *telling stories* uses the most L1 (Branum-Martin et al., 2014).

The results show that parents incorporate more L2 when they *read out loud* than when they *tell stories* to their child. There are some general differences between *reading out loud* and *telling stories*. One of the differences is that the speech during reading out loud (e.g. reading from books to the child) is less spontaneous than telling stories/narratives, because the family member is usually reading from a printed source. Overall, the majority of the family members in this study seem to be reading more storybooks in L1 than in L2, possibly due to their higher proficiency in L1. In regards to *playing word games*, more families reported that they use more L2 or more of a combination of L1 and L2 than the other home literacy activities. The findings suggest that when family members teach their child new words, the members that have

proficiency in L2 (i.e. parents and older siblings) may use both languages, thus making this activity incorporate the highest amount of L2. Although *playing word games* uses the most L2 in the Home Literacy category, L1 use still remains at the majority. The results may be due to the imbalance of L1 to L2 proficiency among all home members.

In summary, there is a clear pattern of L1 and L2 use in the Home Literacy category; the more structured the literacy activity, the more L2 is incorporated. *Telling stories* is the least structured because it is typically a narration and a form of spontaneous speech, *reading out loud* is more structured because the family member reads to the child from a printed source, and *playing word games* is the most structured activity because it uses the highest amount of English. Results in this category suggest that children are exposed to a combination of both languages from family members, but L1 being used more frequently than L2.

### *Dining*

In this study, the dining category accounts for breakfast, lunch, and dinner. Results show 90% of Cantonese is used as the majority language for conversations at the dining table, and that there are no significant L1-L2 differences between the three activities (refer back to Figure 3). This suggests that the L1-L2 use (i.e. mainly L1 use) is consistent across families in all three dining occasions. As anticipated, there should be no differences between breakfast, lunch, and dinner. One explanation to why Cantonese is the language spoken for the majority of this category is because L1 is the language that all home members have proficiency in. Referring back to Figure 1, almost all grandparents only speak Cantonese, meaning they have little to no understanding of the English language. Speaking only Cantonese at the dining table helps the grandparents have a better understanding of the conversations and includes every member during family dining time.

It is important to note that the data for *lunch* at home apply to the weekends, because the children eat lunch at school during the week. Some families have breakfast with their child before they bring them to school, so *breakfast* at home is not limited to only weekends.

### *Entertainment*

The entertainment activities that were explored in this study were television watching and interacting with family and friends. To my knowledge, the majority of the families in the study live in the San Francisco Chinatown, which explains the higher amount of L1 that was used for all following activities. However, L2 exposure is greatest in television watching in this category, perhaps English television shows are incorporated with major Chinese shows viewed at home. On the other hand, individuals tend to prefer watching popular media in their dominant language and when the content is relatable to their native cultural experiences. Younger L2 learners have not had many native cultural experiences, so they tend to prefer media from broader, mainstream cultures (Jia & Aaronson, 2003). Jia and Aaronson's findings help explain why L2 is greatest in television watching by supporting that the children in the current study may be starting to prefer L2 television as they are becoming more involved with the language in settings outside of home and have a higher motive to learn L2 culture. L1 still remains at the majority in this activity, likely due to the higher overall L1 proficiency of all family members, as they are likely to choose to watch television together.

The language use between playing with home members and friends are very similar, although L1 is slightly higher when playing with home members, again, due to their higher proficiency in L1. More L2 was reported to be used when playing with peers, suggesting the children may have peers from diverse language and cultural backgrounds that encourage the use of L2, which is also consistent with previous research (Jia & Aaronson, 2003).

**Classroom: L1 and L2 use between Broadway and North Beach**

Rather than measuring the bilingual language exposure of teachers by using questionnaires, L1-L2 use was measured in seconds by audio recording teachers' speech during the class day. Due to the inconsistencies of the number of recordings per teacher and the varied length of each recording, statistical analysis was not performed for the classroom language use dataset. Instead, results were averaged across the total number of files per teacher and averaged again across teachers to summarize L1 and L2 use of the Broadway and North Beach centers. The centers' L1-L2 use in the classroom was compared quantitatively in each language, separately.

Results show that, overall, English appeared to be spoken more than Cantonese across all activity categories in both Broadway *and* North Beach centers. The two centers show the same pattern of L1-L2 use across the three categories: Dining, Circle Time, and Learning Activities (refer to Figures 5 and 6). The pattern will be discussed in the following section. Of both centers, the Learning Activities category had the most data collected in both languages (Broadway 355.03 s; North Beach 478.36 s), followed by Dining (Broadway 304.89 s; North Beach 322.74 s) then Circle Time (Broadway 265.88 s; North Beach 183.31 s). Across all three categories, Broadway had greater Cantonese-English language use differences than North Beach (Figures 5 and 6). In other words, Broadway had bigger gaps between the spoken amount of L1 and L2 across all activity categories. These quantitative findings are consistent with my visual observations and knowledge of the classroom characteristics of the two centers. Broadway employed two English-speaking teachers in the classrooms while North Beach only had one. This can explain why, overall, Broadway appeared to use more English than Cantonese, and more English than North Beach. During my time in both centers, I noticed differences in the



style of classroom instruction. North Beach teachers were consciously aware to use both languages when speaking to the class. They read a storybook followed by a discussion twice, first in English then in Cantonese. North Beach teachers were noticed to incorporate more word learning exercises with classroom activities and playtime, explaining how North Beach had a total of 478.36 seconds of data in Learning Activities compared to 355.03 seconds for Broadway. Broadway seemed to have a more relaxed environment where the teachers spoke to their students in the language they were more comfortable using. My observations suggest all bilingual teachers were more comfortable in using Cantonese (L1).

### **Classroom: L1 and L2 use across teachers and activities**

The collected audio recordings were divided into the following three categories: Dining, Circle Time, and Learning Activities. As previously mentioned, all categories quantitatively appeared to use more L2 than L1 in both centers.

#### *Dining*

The dining category was observed to be the least formal of the three categories. It included breakfast, lunch, and snack. The classroom was divided into even groups and sat in tables accompanied by a teacher. The conversations during dining times consisted of small talk usually initiated by the teacher, directing students' behavior, and questions asking students if they wanted more food and drink. Data on dining times were collected from all teachers in both centers. Of the 3 bilingual teachers in Broadway, 2 teachers (Teacher B & Teacher D) spoke more L1 to the students, and the third teacher (Teacher C) spoke more L2 and had an L1-L2 difference of 258.09 s. Of the 3 bilingual teachers in North Beach, 2 teachers (Teacher G & Teacher H) also spoke more L1 than L2, and the third teacher (Teacher F) spoke more L2 but only had an L1-L2 difference of 13.77 s (refer back to Table 8). The English monolingual

teachers did not speak any Cantonese during dining times. Because *dining* was less formal than the other two categories, most teachers spoke to the students in the language they were more comfortable using (i.e. monolingual teachers – L2; bilingual teachers – L1).

Viewing each center as a whole, Broadway appears to have a bigger L1-L2 difference during dining times than North Beach (141.91 s vs. 38.52 s, respectively), likely due to the extra English-speaking teacher at the center.

### *Circle Time*

This category was more formal than *Dining Time*, because it was when all students were gathered together to sit in a circle in preparation for the next activity. Circle Time included attendance activities, song singing, storybook reading (but not discussion), various questions asked by teachers, responses from students, and instructional statements to direct student behavior. Data pertaining to the *Circle Time* category were collected from 3 of 5 teachers in Broadway and 4 of 4 teachers in North Beach. The difference of L1-L2 use in Broadway was a total of 94.88 s and 7.97 s for North Beach. Data clearly appears to show that the North Beach center is consciously using both languages evenly, which are consistent with my observations. One suggestion for the seemingly balanced language use in this category may be the North Beach teachers are more aware of formally addressing the entire class in both languages than Broadway. The student body enrolled in the Head Start centers is not entirely from families that are bilingual in Cantonese and English. Some, but few, students come from monolingual English-speaking families, meaning there are English monolingual or English-dominant students in the classrooms. In order for all students to be engaged in activities, adhere to instructions, and answer questions, teachers must be conscious of using each language fairly. North Beach had

more English-dominant students enrolled in the center, which explains the appearance of a more balanced L1 and L2 exposure for whole-class activities such as Circle Time.

### *Learning Activities*

In this study, the activities in this category varied per classroom and were placed in this section only when the teachers incorporated language lessons into the activity. These lessons included storybook discussion (after reading), learning to name and use tools and utensils during crafts activities, lessons on emotions and manners, and word learning using puzzles and games. Overall, more data were collected from North Beach than Broadway (478.36 s vs. 355.03 s), but only 3 of 5 Broadway teachers had data collected while data were collected from all 4 North Beach teachers. Using the available information, Broadway shows a greater difference between L1 and L2 use of both centers (264.61 s vs. 94.96 s).

Through classroom observation and reviewing sound file transcriptions, I noticed differences in the style of storybook telling and discussion between monolingual and bilingual teachers that are consistent with previous studies investigating the style of storybook telling and discussion between mothers that speak different languages (i.e. Wang, Leichtman, & Davies, 2000; Quiroz, Snow, & Zhao, 2010). Although the preceding studies examined mothers and their interactions toward their children, results may well generalize to teachers, who were also female. One English monolingual teacher from Broadway, Teacher A, read the storybook, *Panda and Polar Bear*, to the class during circle time. In comparison, one bilingual teacher from North Beach, Teacher F, read *The Boy Who Cried Wolf* to the class. I previously mentioned that North Beach read the same storybook once in each language, so I will only refer to the story read in English in order to compare the style of storybook telling between Teacher A and Teacher F. Referring back to the transcribed sound files of the activity, Teacher A used elaborations (i.e.

“Do you know what curious is?” “Curious is when you say, ‘Hmm I want to know.’”) when explaining and expanding the story to children. In contrast, Teacher F spent more time focusing on the morals of the storybook she read to class. Through observation, she significantly used more repetitions when asking questions about behavior (i.e. “So is it nice to lie to friends?” “If people find out you lie, they not gonna believe you anymore.” “So that’s why we should always be honest and tell the truth, okay? “That’s why you should be honest.”)

The transcriptions and my observations are consistent with Wang, Leichtman, and Davies (2000) that have found American mothers tend to elaborate and extend on information presented in story books, similar to Teacher A providing her students with examples for the definition of “curious”. Wang and colleagues report that Chinese mothers tend to reply with repetitions and ask repetitive questions, which are very comparable to Teacher F, how she also repeated her questions and statements about honesty and lying. Both teachers read different storybooks with very different storylines, so absolute conclusions cannot be made, although it is still interesting to see how teachers from different language backgrounds compare in their storytelling.

Overall, North Beach quantitatively showed more of balanced use of L1 and L2. There was a similar pattern present in both centers, where the L1-L2 differences decreased as the number of total students per activity recorded increased (i.e. Circle Time had the least L1-L2 difference, followed by Dining, then Learning Activities). One suggestion why this pattern is present is similar to the explanation for dining time at home. When more students are involved in an activity, the teacher would use the language best understood by all monolingual and bilingual students. For example, circle time included the entire class, in which teachers used more English or a more balanced use of L1 and L2. Dining times consisted of evenly divided groups of students and conversational speech, explaining a greater L1-L2 difference than Circle Time.

Lastly, Learning Activities differed across classrooms, meaning the number of students during each activity varied. Since that variable is inconsistent (i.e. some activities included few students and some included slightly larger groups), it resulted in large differences between L1 and L2.

Until the teacher dataset is standardized and can undergo statistical analysis, additional detailed information cannot be gathered regarding differences in L1-L2 use within and between both centers. In the following, I address the limitations of my study and possible remedies if it were to be repeated another time.

## **Limitations**

### **Home Environment Dataset**

The use of questionnaires was helpful in gathering detailed information about home linguistic environments outside of the school centers. Questionnaires have been used for the past two decades as a cost effective and reliable source of data for many studies, because they offer the investigator information that cannot always be retrieved from standardized assessments (e.g. Gutiérrez-Clellen & Kreiter, 2003; Jia & Aaronson, 2003; Lao, 2004; Pérez-Tattam et al., 2013). For example, the parent respondents in this study are much more familiar with the amounts of L1 and L2 exposure at home, because they have actively been a part of home interactions throughout their child's life. However, parents' rating results may be biased due to the inconsistencies of ratings that report how much language exposure their child is receiving (e.g. parents may have altered their responses to fit the study's "expectations" or different parents may have different perspectives on rating scales). Although parents' rating bias may affect the accuracy of the results for this study, utilizing questionnaires was the best option for obtaining information on home language environments.

Since this was my first time drafting and creating a questionnaire, the document was not as comprehensive as anticipated. The questionnaire failed to ask the parent if he or she was born in the United States. If this information was obtained, it would have considerably complemented the current study's results regarding a member's immigration from a foreign country and his or her L2 proficiency.

### **Classroom Environment Dataset**

Audio recording devices can clearly record speakers for long periods of time. The devices are highly portable and the sound files can be easily transferred between devices and deleted when necessary (i.e. from the recorder to the laptop to the laboratory computer). A main restriction is that the sound files do not have visual accompaniments. This makes it difficult for the transcribers to see what interactions are taking place and whom the teacher is speaking to, especially in a lively and energetic preschool classroom. The reliability of the recorded sound files is average; the teachers were encouraged to not pay attention the recorders during the class day, but some teachers may have unintentionally altered their L1 and L2 use by knowing that they were being recorded. Although all teachers completed the consent process and agreed to participate in this study, a bilingual Broadway teacher (Teacher C) mentioned to me that she felt a little uncomfortable being recorded. Even though she was a bilingual teacher, her data in Table 7 show that she seemed to have spoken only English for nearly the entire recorded session. Because I did not want negatively affect her performance that day, I discontinued recording her after the first class activity, *breakfast*, but still included her data because it contributed to the total language exposure to students in Broadway.

The reliability between transcribers is average but not low. There were a total of five transcribers that worked on the sound files, but all were trained to transcribe words in specific

romanized spellings for Cantonese utterances and were taught transcription codes for certain types of utterances (i.e. statement, question, exclamation, abandoned utterance, interrupted utterance, prompt). The main limitation regarding the recordings of teachers was that not all teachers were recorded on the same activities (i.e. some recordings were missing, because the teacher had to attend meetings during the middle of the day). The best method to analyze this dataset was to average the recordings in seconds, thus rendering the results not absolute.

I could not collect the missing data at another time, because my time in San Francisco was limited to one week, allowing me to visit each of the four classrooms once. If this study were to be repeated, my stay in San Francisco would be increased to two weeks, so I could visit each classroom twice in order to obtain data that were missed the first day. Also, I would try and thoroughly arrange my data collection with the staff at Broadway and North Beach prior to my visit, so I would be more informed knowing which teachers would have to leave for certain periods of time and plan accordingly. In regards to the sound files collected from teachers, my next step is to standardize the data where it then can be statistically analyzed. One possible way is to take a 500- or 1000-second section from each recording and compare between the teachers and centers. Also, my next step would be to incorporate more of the transcription files into the analysis. I would like to qualitatively analyze the types of utterances spoken by teachers and measure the mean length of utterance (MLU) for each teacher.

### **Conclusion and Future Studies**

To summarize, the data suggest that Cantonese (L1) was the majority language used by all listed family members and home activities in this study. Members who incorporated the most English (L2) in their speech were the older siblings of the target child, followed by mothers and fathers. Grandparents were reported to rarely use L2 at home. A recurring pattern was found

where L2 use increased when the linguistic structure of the home activity increased. In other words, dining times and playing with family and friends at home show little use of L2 in comparison to playing word games, reading out loud, and television watching.

The quantitative data show that English was used more than Cantonese in both Head Start centers of interest, Broadway and North Beach. However, there were differences in L1 and L2 use between the two centers. As mentioned, Broadway's classroom style is more relaxed, while the classroom style of North Beach is more structured, resulting in greater differences between the L1-L2 use in Broadway and smaller differences in North Beach. As anticipated, North Beach did not show greater differences between L1 and L2 because the teachers consciously try to use both languages fairly. A similar pattern was found in both centers when comparing language use across classroom activities. The L1-L2 difference decreased as the number of students increased, due to teachers speaking in a language that is best understood by the present student group. Results suggest L1 is maintained at home, while L2 is introduced and developed in school.

As previously mentioned, I plan to extend this study by standardizing the teachers' dataset for statistical analyses and measure each teacher's MLU. I also would like to investigate the maintenance and/or abandonment of L1 vs. L2 of children who ideally come from L1-dominant families and use L2 outside of the home environment. Lastly, I would like to collaborate my study with Pui Fong Kan's ongoing longitudinal study that tracks the lexical development of the same bilingual students at the Head Start centers to examine if there are any correlations between L1-L2 exposure and L1-L2 development.

### **Acknowledgements**

I am grateful for my advisor, Pui Fong Kan, generously providing me with the opportunity to gain valuable and unforgettable experience by collecting the data in the Head Start



schools in San Francisco and by supporting me through the entirety of this process. I thank all of the research assistants, Michelle Cheung, Niccole Anzivino, Annaliese Miller, and Sasha Jassem who have worked a total of over 150 hours on transcribing the sound files. I also thank FanYin Cheng for translating the questionnaire into Chinese, and VoonFee Leow and additional staff at the Head Start centers in San Francisco for helping me organize my project before and after my visit.

## Appendix A

## Parent Questionnaires written in Chinese and English

(Note: "Toisan" is a dialect of Cantonese.)

## 語言環境：家長/照顧者問卷調查

您是孩子的誰？：☐ 母親 ☐ 父親 ☐ 其他：\_\_\_\_\_您孩子的出生年月日：\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ 年齡：\_\_\_\_\_ 性別：☐ 女 ☐ 男施測中心位址：☐ Broadway ☐ North Beach ☐ Sunset 教室：☐ FD1 ☐ FD2 ☐ AM ☐ PM

## 請依所知填答。

- 父親的最高學歷？\_\_\_\_\_ 母親的最高學歷？\_\_\_\_\_
- 是否覺得您的孩子在口語表達能力、語言能力、聽力、以及學習能力出現問題？☐ 是 ☐ 否  
如果**是**，您認為出現問題的是哪些部分？(選擇填答)：  
☐ 語表達能力 ☐ 語言能力 ☐ 聽力 ☐ 學習能力 ☐ 其他：\_\_\_\_\_
- 您孩子的出生地是否為美國？☐ yes ☐ no
- 您孩子的出生地是否為美國？☐ 是 ☐ 否  
如為**否**，您的孩子於何時來到美國？(月/西元年) \_\_\_\_\_ / \_\_\_\_\_
- 您的孩子何時入學？(月/西元年) \_\_\_\_\_ / \_\_\_\_\_
- 您的孩子何時進入啟明啟蒙學校學習？(月/西元年) \_\_\_\_\_ / \_\_\_\_\_
- 您的孩子是否於進入啟明啟蒙學校後才開始學習英文？☐ 是 ☐ 否
- 您的孩子在家經常使用的語言是哪些？(可複選)  
☐ 廣東話 ☐ 英語 ☐ 台山話 ☐ 其他：\_\_\_\_\_
- 您的孩子在家時最喜歡使用哪一個語言？(擇一)  
☐ 廣東話 ☐ 英語 ☐ 台山話 ☐ 其他：\_\_\_\_\_
- 您認為您的孩子在啟明啟蒙學校學習各語言的比例分別是多少？  
廣東話：\_\_\_\_\_ % 英語：\_\_\_\_\_ % ☐ 無法回答
- 請填寫家庭成員**每週在家**使用的各語言的比例。若該家庭成員目前不住在家中，請選擇“**目前不住在家中**”。如有缺漏成員，請於空白欄位填寫該位家中成員。

母親	父親
<input type="checkbox"/> 100% 廣東話/台山話 <input type="checkbox"/> 80% 廣東話/台山話; 20% 英文 <input type="checkbox"/> 60% 廣東話/台山話; 40% 英文 <input type="checkbox"/> 50% 廣東話/台山話; 50% 英文 <input type="checkbox"/> 40% 廣東話/台山話; 60% 英文 <input type="checkbox"/> 20% 廣東話/台山話; 80% 英文 <input type="checkbox"/> 100% 英文 <input type="checkbox"/> 其他語言: _____ % _____ % <input type="checkbox"/> 目前不住在家中	<input type="checkbox"/> 100% 廣東話/台山話 <input type="checkbox"/> 80% 廣東話/台山話; 20% 英文 <input type="checkbox"/> 60% 廣東話/台山話; 40% 英文 <input type="checkbox"/> 50% 廣東話/台山話; 50% 英文 <input type="checkbox"/> 40% 廣東話/台山話; 60% 英文 <input type="checkbox"/> 20% 廣東話/台山話; 80% 英文 <input type="checkbox"/> 100% 英文 <input type="checkbox"/> 其他語言: _____ % _____ % <input type="checkbox"/> 目前不住在家中

兄/姐	弟/妹
<input type="checkbox"/> 100% 廣東話/台山話 <input type="checkbox"/> 80% 廣東話/台山話; 20% 英文 <input type="checkbox"/> 60% 廣東話/台山話; 40% 英文 <input type="checkbox"/> 50% 廣東話/台山話; 50% 英文 <input type="checkbox"/> 40% 廣東話/台山話; 60% 英文 <input type="checkbox"/> 20% 廣東話/台山話; 80% 英文 <input type="checkbox"/> 100% 英文 <input type="checkbox"/> 其他語言: _____ % _____ % <input type="checkbox"/> 目前不住在家中	<input type="checkbox"/> 100% 廣東話/台山話 <input type="checkbox"/> 80% 廣東話/台山話; 20% 英文 <input type="checkbox"/> 60% 廣東話/台山話; 40% 英文 <input type="checkbox"/> 50% 廣東話/台山話; 50% 英文 <input type="checkbox"/> 40% 廣東話/台山話; 60% 英文 <input type="checkbox"/> 20% 廣東話/台山話; 80% 英文 <input type="checkbox"/> 100% 英文 <input type="checkbox"/> 其他語言: _____ % _____ % <input type="checkbox"/> 目前不住在家中
奶奶/外婆	爺爺/外公
<input type="checkbox"/> 100% 廣東話/台山話 <input type="checkbox"/> 80% 廣東話/台山話; 20% 英文 <input type="checkbox"/> 60% 廣東話/台山話; 40% 英文 <input type="checkbox"/> 50% 廣東話/台山話; 50% 英文 <input type="checkbox"/> 40% 廣東話/台山話; 60% 英文 <input type="checkbox"/> 20% 廣東話/台山話; 80% 英文 <input type="checkbox"/> 100% 英文 <input type="checkbox"/> 其他語言: _____ % _____ % <input type="checkbox"/> 目前不住在家中	<input type="checkbox"/> 100% 廣東話/台山話 <input type="checkbox"/> 80% 廣東話/台山話; 20% 英文 <input type="checkbox"/> 60% 廣東話/台山話; 40% 英文 <input type="checkbox"/> 50% 廣東話/台山話; 50% 英文 <input type="checkbox"/> 40% 廣東話/台山話; 60% 英文 <input type="checkbox"/> 20% 廣東話/台山話; 80% 英文 <input type="checkbox"/> 100% 英文 <input type="checkbox"/> 其他語言: _____ % _____ % <input type="checkbox"/> 目前不住在家中
其他成員: _____	其他成員: _____
<input type="checkbox"/> 100% 廣東話/台山話 <input type="checkbox"/> 80% 廣東話/台山話; 20% 英文 <input type="checkbox"/> 60% 廣東話/台山話; 40% 英文 <input type="checkbox"/> 50% 廣東話/台山話; 50% 英文 <input type="checkbox"/> 40% 廣東話/台山話; 60% 英文 <input type="checkbox"/> 20% 廣東話/台山話; 80% 英文 <input type="checkbox"/> 100% 英文 <input type="checkbox"/> 其他語言: _____ % _____ % <input type="checkbox"/> 目前不住在家中	<input type="checkbox"/> 100% 廣東話/台山話 <input type="checkbox"/> 80% 廣東話/台山話; 20% 英文 <input type="checkbox"/> 60% 廣東話/台山話; 40% 英文 <input type="checkbox"/> 50% 廣東話/台山話; 50% 英文 <input type="checkbox"/> 40% 廣東話/台山話; 60% 英文 <input type="checkbox"/> 20% 廣東話/台山話; 80% 英文 <input type="checkbox"/> 100% 英文 <input type="checkbox"/> 其他語言: _____ % _____ % <input type="checkbox"/> 目前不住在家中

12. 請填寫每週進行下述活動時，您的孩子所處的語言環境各語言的比例。

活動項目	每週耗時	語言環境之各語言百分比
讀報紙或故事書等文章給您的孩子聽	每週幾小時 <input type="checkbox"/> 0-5 <input type="checkbox"/> 6-10 <input type="checkbox"/> 11-15 <input type="checkbox"/> 16-20 <input type="checkbox"/> 21-25 <input type="checkbox"/> 26+ <input type="checkbox"/> N/A	讀這些文章時，您使用語言的比例分別是多少？ <input type="checkbox"/> 100% 廣東話/台山話 <input type="checkbox"/> 80% 廣東話/台山話; 20% 英文 <input type="checkbox"/> 60% 廣東話/台山話; 40% 英文 <input type="checkbox"/> 50% 廣東話/台山話; 50% 英文 <input type="checkbox"/> 40% 廣東話/台山話; 60% 英文 <input type="checkbox"/> 20% 廣東話/台山話; 80% 英文 <input type="checkbox"/> 100% 英文 <input type="checkbox"/> 其他語言: _____ % _____ %
說故事給您的孩子聽(沒有故事書或報紙等)	每週幾小時 <input type="checkbox"/> 0-5 <input type="checkbox"/> 6-10 <input type="checkbox"/> 11-15 <input type="checkbox"/> 16-20 <input type="checkbox"/> 21-25 <input type="checkbox"/> 26+ <input type="checkbox"/> N/A	讀這些文章時，您使用語言的比例分別是多少？ <input type="checkbox"/> 100% 廣東話/台山話 <input type="checkbox"/> 80% 廣東話/台山話; 20% 英文 <input type="checkbox"/> 60% 廣東話/台山話; 40% 英文 <input type="checkbox"/> 50% 廣東話/台山話; 50% 英文 <input type="checkbox"/> 40% 廣東話/台山話; 60% 英文 <input type="checkbox"/> 20% 廣東話/台山話; 80% 英文 <input type="checkbox"/> 100% 英文 <input type="checkbox"/> 其他語言: _____ % _____ %

活動項目	每週耗時	語言環境之各語言百分比
早餐時間	每週幾小時 <input type="checkbox"/> 0-5 <input type="checkbox"/> 6-10 <input type="checkbox"/> 11-15 <input type="checkbox"/> 16-20 <input type="checkbox"/> 21-25 <input type="checkbox"/> 26+ <input type="checkbox"/> N/A	讀這些文章時，您使用語言的比例分別是多少？ <input type="checkbox"/> 100% 廣東話/台山話 <input type="checkbox"/> 80% 廣東話/台山話; 20% 英文 <input type="checkbox"/> 60% 廣東話/台山話; 40% 英文 <input type="checkbox"/> 50% 廣東話/台山話; 50% 英文 <input type="checkbox"/> 40% 廣東話/台山話; 60% 英文 <input type="checkbox"/> 20% 廣東話/台山話; 80% 英文 <input type="checkbox"/> 100% 英文 <input type="checkbox"/> 其他語言: _____ % _____ %
午餐時間	每週幾小時 <input type="checkbox"/> 0-5 <input type="checkbox"/> 6-10 <input type="checkbox"/> 11-15 <input type="checkbox"/> 16-20 <input type="checkbox"/> 21-25 <input type="checkbox"/> 26+ <input type="checkbox"/> N/A	讀這些文章時，您使用語言的比例分別是多少？ <input type="checkbox"/> 100% 廣東話/台山話 <input type="checkbox"/> 80% 廣東話/台山話; 20% 英文 <input type="checkbox"/> 60% 廣東話/台山話; 40% 英文 <input type="checkbox"/> 50% 廣東話/台山話; 50% 英文 <input type="checkbox"/> 40% 廣東話/台山話; 60% 英文 <input type="checkbox"/> 20% 廣東話/台山話; 80% 英文 <input type="checkbox"/> 100% 英文 <input type="checkbox"/> 其他語言: _____ % _____ %
晚餐時間	每週幾小時 <input type="checkbox"/> 0-5 <input type="checkbox"/> 6-10 <input type="checkbox"/> 11-15 <input type="checkbox"/> 16-20 <input type="checkbox"/> 21-25 <input type="checkbox"/> 26+ <input type="checkbox"/> N/A	讀這些文章時，您使用語言的比例分別是多少？ <input type="checkbox"/> 100% 廣東話/台山話 <input type="checkbox"/> 80% 廣東話/台山話; 20% 英文 <input type="checkbox"/> 60% 廣東話/台山話; 40% 英文 <input type="checkbox"/> 50% 廣東話/台山話; 50% 英文 <input type="checkbox"/> 40% 廣東話/台山話; 60% 英文 <input type="checkbox"/> 20% 廣東話/台山話; 80% 英文 <input type="checkbox"/> 100% 英文 <input type="checkbox"/> 其他語言: _____ % _____ %
看電視/影片	每週幾小時 <input type="checkbox"/> 0-5 <input type="checkbox"/> 6-10 <input type="checkbox"/> 11-15 <input type="checkbox"/> 16-20 <input type="checkbox"/> 21-25 <input type="checkbox"/> 26+ <input type="checkbox"/> N/A	讀這些文章時，您使用語言的比例分別是多少？ <input type="checkbox"/> 100% 廣東話/台山話 <input type="checkbox"/> 80% 廣東話/台山話; 20% 英文 <input type="checkbox"/> 60% 廣東話/台山話; 40% 英文 <input type="checkbox"/> 50% 廣東話/台山話; 50% 英文 <input type="checkbox"/> 40% 廣東話/台山話; 60% 英文 <input type="checkbox"/> 20% 廣東話/台山話; 80% 英文 <input type="checkbox"/> 100% 英文 <input type="checkbox"/> 其他語言: _____ % _____ %
玩遊戲同時學習新的字詞	每週幾小時 <input type="checkbox"/> 0-5 <input type="checkbox"/> 6-10 <input type="checkbox"/> 11-15 <input type="checkbox"/> 16-20 <input type="checkbox"/> 21-25 <input type="checkbox"/> 26+ <input type="checkbox"/> N/A	讀這些文章時，您使用語言的比例分別是多少？ <input type="checkbox"/> 100% 廣東話/台山話 <input type="checkbox"/> 80% 廣東話/台山話; 20% 英文 <input type="checkbox"/> 60% 廣東話/台山話; 40% 英文 <input type="checkbox"/> 50% 廣東話/台山話; 50% 英文 <input type="checkbox"/> 40% 廣東話/台山話; 60% 英文 <input type="checkbox"/> 20% 廣東話/台山話; 80% 英文 <input type="checkbox"/> 100% 英文 <input type="checkbox"/> 其他語言: _____ % _____ %
與家人玩耍	每週幾小時 <input type="checkbox"/> 0-5 <input type="checkbox"/> 6-10 <input type="checkbox"/> 11-15 <input type="checkbox"/> 16-20 <input type="checkbox"/> 21-25 <input type="checkbox"/> 26+ <input type="checkbox"/> N/A	讀這些文章時，您使用語言的比例分別是多少？ <input type="checkbox"/> 100% 廣東話/台山話 <input type="checkbox"/> 80% 廣東話/台山話; 20% 英文 <input type="checkbox"/> 60% 廣東話/台山話; 40% 英文 <input type="checkbox"/> 50% 廣東話/台山話; 50% 英文 <input type="checkbox"/> 40% 廣東話/台山話; 60% 英文 <input type="checkbox"/> 20% 廣東話/台山話; 80% 英文 <input type="checkbox"/> 100% 英文 <input type="checkbox"/> 其他語言: _____ % _____ %

活動項目	每週耗時	語言環境之各語言百分比
與朋友玩耍	每週幾小時 <input type="checkbox"/> 0-5 <input type="checkbox"/> 6-10 <input type="checkbox"/> 11-15 <input type="checkbox"/> 16-20 <input type="checkbox"/> 21-25 <input type="checkbox"/> 26+ <input type="checkbox"/> N/A	讀這些文章時，您使用語言的比例分別是多少？ <input type="checkbox"/> 100% 廣東話/台山話 <input type="checkbox"/> 80% 廣東話/台山話; 20% 英文 <input type="checkbox"/> 60% 廣東話/台山話; 40% 英文 <input type="checkbox"/> 50% 廣東話/台山話; 50% 英文 <input type="checkbox"/> 40% 廣東話/台山話; 60% 英文 <input type="checkbox"/> 20% 廣東話/台山話; 80% 英文 <input type="checkbox"/> 100% 英文 <input type="checkbox"/> 其他語言: _____ % _____ %

## Language Input: Parent/Caregiver Questionnaire

Relationship to child: ☐ Mother ☐ Father ☐ Other: \_\_\_\_\_

Child's date of birth: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ Age: \_\_\_\_\_

Gender: ☐ F ☐ MCenter: ☐ Broadway ☐ North Beach ☐ Sunset Classroom: ☐ FD1 ☐ FD2 ☐ AM ☐ PM

## Please complete to the best of your knowledge.

- What was the highest education your child's father received? \_\_\_\_\_ mother? \_\_\_\_\_
- Do you have concerns about your child's speech, language, hearing, or learning ability? ☐ yes ☐ no  
 If yes, what is the concern? (optional)  
☐ Speech ☐ Language ☐ Hearing ☐ Learning ☐ Others: \_\_\_\_\_  
 If yes, does your child have an IEP? ☐ yes ☐ no
- Were you born in the USA? ☐ yes ☐ no
- Was your child born in the USA? ☐ yes ☐ no  
 If not, what date did your child move to the USA? (mm/yyyy) \_\_\_\_ / \_\_\_\_
- At what time did your child start to go to school? (mm/yyyy) \_\_\_\_ / \_\_\_\_
- At what time did your child start to go to Kai Ming? (mm/yyyy) \_\_\_\_ / \_\_\_\_
- Did your child start learning English at Kai Ming? ☐ yes ☐ no
- What language(s) does your child speak at home? (check all that apply)  
☐ Cantonese ☐ English ☐ Toisan ☐ Other: \_\_\_\_\_
- Which language does the child feel more comfortable speaking at home? (choose one)  
☐ Cantonese ☐ English ☐ Toisan ☐ Other: \_\_\_\_\_
- What percentage of each language do you assume your child learns at Kai Ming?  
 Cantonese: \_\_\_\_\_ % English: \_\_\_\_\_ % ☐ N/A
- What percentage of each language do the following members at home speak to your child per week? Please add any members in the household to the blank boxes if they are not listed.

MOTHER	FATHER
<input type="checkbox"/> 100% Cantonese/Toisan <input type="checkbox"/> 80% Cantonese/Toisan; 20% English <input type="checkbox"/> 60% Cantonese/Toisan; 40% English <input type="checkbox"/> 50% Cantonese/Toisan; 50% English <input type="checkbox"/> 40% Cantonese/Toisan; 60% English <input type="checkbox"/> 20% Cantonese/Toisan; 80% English <input type="checkbox"/> 100% English <input type="checkbox"/> Other: _____ % _____ % <input type="checkbox"/> Member does not live at home	<input type="checkbox"/> 100% Cantonese/Toisan <input type="checkbox"/> 80% Cantonese/Toisan; 20% English <input type="checkbox"/> 60% Cantonese/Toisan; 40% English <input type="checkbox"/> 50% Cantonese/Toisan; 50% English <input type="checkbox"/> 40% Cantonese/Toisan; 60% English <input type="checkbox"/> 20% Cantonese/Toisan; 80% English <input type="checkbox"/> 100% English <input type="checkbox"/> Other: _____ % _____ % <input type="checkbox"/> Member does not live at home

OLDER SIBLING	YOUNGER SIBLING
<input type="checkbox"/> 100% Cantonese/Toisan <input type="checkbox"/> 80% Cantonese/Toisan; 20% English <input type="checkbox"/> 60% Cantonese/Toisan; 40% English <input type="checkbox"/> 50% Cantonese/Toisan; 50% English <input type="checkbox"/> 40% Cantonese/Toisan; 60% English <input type="checkbox"/> 20% Cantonese/Toisan; 80% English <input type="checkbox"/> 100% English <input type="checkbox"/> Other: _____ % _____ % <input type="checkbox"/> Member does not live at home	<input type="checkbox"/> 100% Cantonese/Toisan <input type="checkbox"/> 80% Cantonese/Toisan; 20% English <input type="checkbox"/> 60% Cantonese/Toisan; 40% English <input type="checkbox"/> 50% Cantonese/Toisan; 50% English <input type="checkbox"/> 40% Cantonese/Toisan; 60% English <input type="checkbox"/> 20% Cantonese/Toisan; 80% English <input type="checkbox"/> 100% English <input type="checkbox"/> Other: _____ % _____ % <input type="checkbox"/> Member does not live at home
GRANDMOTHER	GRANDFATHER
<input type="checkbox"/> 100% Cantonese/Toisan <input type="checkbox"/> 80% Cantonese/Toisan; 20% English <input type="checkbox"/> 60% Cantonese/Toisan; 40% English <input type="checkbox"/> 50% Cantonese/Toisan; 50% English <input type="checkbox"/> 40% Cantonese/Toisan; 60% English <input type="checkbox"/> 20% Cantonese/Toisan; 80% English <input type="checkbox"/> 100% English <input type="checkbox"/> Other: _____ % _____ % <input type="checkbox"/> Member does not live at home	<input type="checkbox"/> 100% Cantonese/Toisan <input type="checkbox"/> 80% Cantonese/Toisan; 20% English <input type="checkbox"/> 60% Cantonese/Toisan; 40% English <input type="checkbox"/> 50% Cantonese/Toisan; 50% English <input type="checkbox"/> 40% Cantonese/Toisan; 60% English <input type="checkbox"/> 20% Cantonese/Toisan; 80% English <input type="checkbox"/> 100% English <input type="checkbox"/> Other: _____ % _____ % <input type="checkbox"/> Member does not live at home

OTHER:	OTHER:
<input type="checkbox"/> 100% Cantonese/Toisan <input type="checkbox"/> 80% Cantonese/Toisan; 20% English <input type="checkbox"/> 60% Cantonese/Toisan; 40% English <input type="checkbox"/> 50% Cantonese/Toisan; 50% English <input type="checkbox"/> 40% Cantonese/Toisan; 60% English <input type="checkbox"/> 20% Cantonese/Toisan; 80% English <input type="checkbox"/> 100% English <input type="checkbox"/> Other: _____ % _____ % <input type="checkbox"/> Member does not live at home	<input type="checkbox"/> 100% Cantonese/Toisan <input type="checkbox"/> 80% Cantonese/Toisan; 20% English <input type="checkbox"/> 60% Cantonese/Toisan; 40% English <input type="checkbox"/> 50% Cantonese/Toisan; 50% English <input type="checkbox"/> 40% Cantonese/Toisan; 60% English <input type="checkbox"/> 20% Cantonese/Toisan; 80% English <input type="checkbox"/> 100% English <input type="checkbox"/> Other: _____ % _____ % <input type="checkbox"/> Member does not live at home

12. What percentage of each language is your child exposed to during the following activities **per week**?

Activity	Hours spent <b>per week</b>	Percentage of each language exposed to your child
Reading out loud to your child (storybook, newspapers, etc.)	<input type="checkbox"/> 0-5 hours per week <input type="checkbox"/> 6-10 <input type="checkbox"/> 11-15 <input type="checkbox"/> 16-20 <input type="checkbox"/> 21-25 <input type="checkbox"/> 26+ <input type="checkbox"/> No information about this activity	<input type="checkbox"/> 100% Cantonese/Toisan <input type="checkbox"/> 80% Cantonese/Toisan; 20% English <input type="checkbox"/> 60% Cantonese/Toisan; 40% English <input type="checkbox"/> 50% Cantonese/Toisan; 50% English <input type="checkbox"/> 40% Cantonese/Toisan; 60% English <input type="checkbox"/> 20% Cantonese/Toisan; 80% English <input type="checkbox"/> 100% English <input type="checkbox"/> Other: _____ % _____ %
Telling stories out loud to your child (without books or newspapers, etc.)	<input type="checkbox"/> 0-5 hours per week <input type="checkbox"/> 6-10 <input type="checkbox"/> 11-15 <input type="checkbox"/> 16-20 <input type="checkbox"/> 21-25 <input type="checkbox"/> 26+ <input type="checkbox"/> No information about this activity	<input type="checkbox"/> 100% Cantonese/Toisan <input type="checkbox"/> 80% Cantonese/Toisan; 20% English <input type="checkbox"/> 60% Cantonese/Toisan; 40% English <input type="checkbox"/> 50% Cantonese/Toisan; 50% English <input type="checkbox"/> 40% Cantonese/Toisan; 60% English <input type="checkbox"/> 20% Cantonese/Toisan; 80% English <input type="checkbox"/> 100% English <input type="checkbox"/> Other: _____ % _____ %
Breakfast	<input type="checkbox"/> 0-5 hours per week <input type="checkbox"/> 6-10 <input type="checkbox"/> 11-15 <input type="checkbox"/> 16-20 <input type="checkbox"/> 21-25 <input type="checkbox"/> 26+ <input type="checkbox"/> No information about this activity	<input type="checkbox"/> 100% Cantonese/Toisan <input type="checkbox"/> 80% Cantonese/Toisan; 20% English <input type="checkbox"/> 60% Cantonese/Toisan; 40% English <input type="checkbox"/> 50% Cantonese/Toisan; 50% English <input type="checkbox"/> 40% Cantonese/Toisan; 60% English <input type="checkbox"/> 20% Cantonese/Toisan; 80% English <input type="checkbox"/> 100% English <input type="checkbox"/> Other: _____ % _____ %
Lunch	<input type="checkbox"/> 0-5 hours per week <input type="checkbox"/> 6-10 <input type="checkbox"/> 11-15 <input type="checkbox"/> 16-20 <input type="checkbox"/> 21-25 <input type="checkbox"/> 26+ <input type="checkbox"/> No information about this activity	<input type="checkbox"/> 100% Cantonese/Toisan <input type="checkbox"/> 80% Cantonese/Toisan; 20% English <input type="checkbox"/> 60% Cantonese/Toisan; 40% English <input type="checkbox"/> 50% Cantonese/Toisan; 50% English <input type="checkbox"/> 40% Cantonese/Toisan; 60% English <input type="checkbox"/> 20% Cantonese/Toisan; 80% English <input type="checkbox"/> 100% English <input type="checkbox"/> Other: _____ % _____ %

Activity	Hours spent <b>per week</b>	Percentage of each language exposed to your child
Dinner	<input type="checkbox"/> 0-5 hours per week <input type="checkbox"/> 6-10 <input type="checkbox"/> 11-15 <input type="checkbox"/> 16-20 <input type="checkbox"/> 21-25 <input type="checkbox"/> 26+ <input type="checkbox"/> No information about this activity	<input type="checkbox"/> 100% Cantonese/Toisan <input type="checkbox"/> 80% Cantonese/Toisan; 20% English <input type="checkbox"/> 60% Cantonese/Toisan; 40% English <input type="checkbox"/> 50% Cantonese/Toisan; 50% English <input type="checkbox"/> 40% Cantonese/Toisan; 60% English <input type="checkbox"/> 20% Cantonese/Toisan; 80% English <input type="checkbox"/> 100% English <input type="checkbox"/> Other: _____ % _____ %
Watching TV/videos	<input type="checkbox"/> 0-5 hours per week <input type="checkbox"/> 6-10 <input type="checkbox"/> 11-15 <input type="checkbox"/> 16-20 <input type="checkbox"/> 21-25 <input type="checkbox"/> 26+ <input type="checkbox"/> No information about this activity	<input type="checkbox"/> 100% Cantonese/Toisan <input type="checkbox"/> 80% Cantonese/Toisan; 20% English <input type="checkbox"/> 60% Cantonese/Toisan; 40% English <input type="checkbox"/> 50% Cantonese/Toisan; 50% English <input type="checkbox"/> 40% Cantonese/Toisan; 60% English <input type="checkbox"/> 20% Cantonese/Toisan; 80% English <input type="checkbox"/> 100% English <input type="checkbox"/> Other: _____ % _____ %
Playing games involving learning new words	<input type="checkbox"/> 0-5 hours per week <input type="checkbox"/> 6-10 <input type="checkbox"/> 11-15 <input type="checkbox"/> 16-20 <input type="checkbox"/> 21-25 <input type="checkbox"/> 26+ <input type="checkbox"/> No information about this activity	<input type="checkbox"/> 100% Cantonese/Toisan <input type="checkbox"/> 80% Cantonese/Toisan; 20% English <input type="checkbox"/> 60% Cantonese/Toisan; 40% English <input type="checkbox"/> 50% Cantonese/Toisan; 50% English <input type="checkbox"/> 40% Cantonese/Toisan; 60% English <input type="checkbox"/> 20% Cantonese/Toisan; 80% English <input type="checkbox"/> 100% English <input type="checkbox"/> Other: _____ % _____ %
Playing with household members at home	<input type="checkbox"/> 0-5 hours per week <input type="checkbox"/> 6-10 <input type="checkbox"/> 11-15 <input type="checkbox"/> 16-20 <input type="checkbox"/> 21-25 <input type="checkbox"/> 26+ <input type="checkbox"/> No information about this activity	<input type="checkbox"/> 100% Cantonese/Toisan <input type="checkbox"/> 80% Cantonese/Toisan; 20% English <input type="checkbox"/> 60% Cantonese/Toisan; 40% English <input type="checkbox"/> 50% Cantonese/Toisan; 50% English <input type="checkbox"/> 40% Cantonese/Toisan; 60% English <input type="checkbox"/> 20% Cantonese/Toisan; 80% English <input type="checkbox"/> 100% English <input type="checkbox"/> Other: _____ % _____ %
Playing with friends at home	<input type="checkbox"/> 0-5 hours per week <input type="checkbox"/> 6-10 <input type="checkbox"/> 11-15 <input type="checkbox"/> 16-20 <input type="checkbox"/> 21-25 <input type="checkbox"/> 26+ <input type="checkbox"/> No information about this activity	<input type="checkbox"/> 100% Cantonese/Toisan <input type="checkbox"/> 80% Cantonese/Toisan; 20% English <input type="checkbox"/> 60% Cantonese/Toisan; 40% English <input type="checkbox"/> 50% Cantonese/Toisan; 50% English <input type="checkbox"/> 40% Cantonese/Toisan; 60% English <input type="checkbox"/> 20% Cantonese/Toisan; 80% English <input type="checkbox"/> 100% English <input type="checkbox"/> Other: _____ % _____ %

## Appendix B

## Classroom Schedule\* (Broadway)

8:00 – 8:30 Free Choice Play

8:30 – 8:45 Greeting

8:45 – 9:15 Breakfast

9:15 – 10:15 Outdoor Play

10:15 – 10:30 Large Group (Circle Time\*\*)/Music/Story

10:30 – 12:00 Free Choice Play/Small Group

12:00 – 12:40 Lunch Time/Brush Teeth/Story

12:40 – 2:30 Nap/Quiet Time

2:30 – 3:00 Snack Time

3:00 – 4:00 Free Choice Play/Small Group

\*This was the schedule for one classroom in Broadway. Schedules vary slightly between classrooms and centers, but still contain the main activities.

\*\*Although Circle Time is only listed once, it actually occurred several times during the day, usually to regroup students before each main activity.



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